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Acorn tip bougie examination of the urethra.

FIG. 25.



Filiform examination of the urethra. A number of filiforms are passed down to the constriction. Manipulation with one at a time is done which may allow the filiforms to pass through the constricture.

FIG. 26.



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TO STUDENTS AND PRACTITIONERS

BY LEADING MEMBERS OF THE MEDICAL PROFESSION
THROUGHOUT THE WORLD

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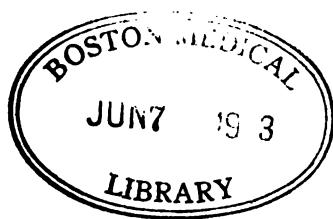
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Diagnosis and Treatment

GONORRHœA: ITS COMPLICATIONS AND SEQUELÆ

BY LEWIS WINE BREMERMANN, A.M., M.D.

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So soon as the medical profession considers gonorrhœa, its complications and sequelæ, in the important light which it deserves, only then will scientific thought be given to the treatment of this widespread and devastating infection.

It has unfortunately been the consensus of opinion, both among medical men and the laymen, that this disease is a simple and trifling affection, easily eradicated by a few syringefuls of injection and a copious amount of santal-wood oil *per oreum*, and that it is every man's duty to have at least one attack of gonorrhœa in his life.

The genito-urinary surgeon and the gynaecologist recognize the fact that gonorrhœa plays a paramount rôle, and its results are such that its effect upon mankind in general is so stupendous that it is unbelievable.

Some general practitioners have already begun to realize what gonorrhœal infections mean, and frequently they arrive at an opinion that the disease is incurable on account of the difficulties which they have encountered eliminating the infection.

Through both the ignorance of the physician and the layman, gonorrhœa has become almost a universal disease, and one comes to the conclusion that the entire population may be divided into three classes: those who *have had* gonorrhœa, those who *have it now*, and those who *are going to contract it*.

A few years ago the country districts, small towns, and villages seemed to have been particularly free from the disease, but now it is different: the advent of the automobile and interurban electric system has brought the larger towns and cities into close proximity to the

villages and farm, and the country boy and girl are just as apt to be infected as the city young man or woman.

Gonorrhœal infection produces greater ill results, morally, physically, domestically, and economically, than any other disease that "flesh is heir to."

Only recently I had as a visitor in my office a very prominent surgeon who came to see me for some instruction and knowledge regarding office technic in the treatment of genito-urinary patients. He was particularly interested in gonorrhœa and its treatment, as he had seen so many unfortunate patients who had been sufferers for years that were martyrs to ignorance and inefficient treatment.

I was treating a patient, and I made the remark "that just so soon as I could clear the few remaining shreds and small particles from the urine, and there was no pus or bacteria present, I could discharge him cured, and not before." My friend, the surgeon, spoke up, saying, "Why, you don't mean to say that you can clear the urine of those shreds, do you?" To say that I was surprised at the colossal ignorance of my friend would be drawing it mild. I assured him that it was not only possible but absolutely necessary to accomplish a cure. He then remarked "that in all his experience he had paid little attention to shreds, and thought that once a patient had gonorrhœa he would always have shreds, and, in fact, had given out to his patients this opinion." He seemed horrified at the opinions I expressed, and after the patient had left he again remarked: "Doctor, I want you to examine me." Much to my surprise, I found the urine full of long and short shreds, containing pus, epithelial cells, many bacteria, but no gonococci. Physical examination elicited the fact that he had chronic prostatitis and posterior urethritis. His history showed an infection fourteen years prior, complicated with posterior urethritis, an acute prostatic abscess, and a right-side epididymitis. He had no symptoms for all these years except an occasional thin, watery discharge. He thought this was due to weakness, and that he had been perfectly well for all these years. I simply mention this case to emphasize the importance of knowledge concerning gonorrhœa. Is it any wonder that ignorance in the scientific treatment of these cases is so universal?

Gonorrhœa has been known for many years, but it was only recog-

nized scientifically in 1879 by the discovery of the cause by Neisser. He discovered an intracellular, biscuit-shaped diplococcus which was always found in the discharge in these cases, which had peculiar staining properties and would grow only upon special culture media. This bacterium has been termed the gonococcus.

Space will not permit a detailed description of the history, etiology, symptomatology, or pathology, but I will dwell at some length upon the treatment of gonorrhœa, its complications and sequelæ in the male.

To gain the best results in the treatment of gonorrhœa the diagnosis is all-important. All discharges from the urethra must not be considered gonorrhœa, by any means. Here is where many physicians make their first mistake. The diagnosis can be made accurately only with the microscope and culture-tube.

I have already called attention to the fact that the diagnosis is important, and before beginning a discussion of the treatment it is essential to have a scientific understanding of this subject. The diagnosis is not always so simple as it may seem: the fact that an individual has been exposed and has a discharge from the urethra is no indication that he has gonorrhœa. He may have a simple infection due to other bacteria than the gonococcus, which resembles gonorrhœa so closely that from signs alone it would be impossible to differentiate. The common bacteria found in non-specific infection are: *Staphylococcus*, *B. coli*, *Streptococcus*, *Monococcus catarrhalis*. These, with the exception of the latter, are easily told by the microscope. The *Monococcus catarrhalis* is more frequently mistaken for the gonococcus than any other bacteria, owing to the fact that the clinical symptoms resemble closely those of gonorrhœa, and this bacterium resembles closely the gonococcus, it groups itself similarly, has the same staining qualities, and is Gram-negative. An experienced laboratory worker can frequently differentiate between the two by microscopic examination. The onset of the disease differs in the two infections. Gonorrhœal infection has a longer period of incubation than the infection produced by the monococcus, but this is difficult to ascertain, for some patients may have two or three different exposures in the course of a week, the symptoms making themselves manifest a few hours after the last, and yet the urethra may have been infected by the exposure a week previous.

In arriving at an accurate diagnosis between these two infections one must resort to the culture-tube. It is well known that the gonococcus is very difficult to cultivate and will grow only upon special media and in proper environment, whereas the *Monococcus catarrhalis* grows rapidly upon almost any media within twenty-four hours: the culture will show a profuse and abundant growth.

Why is this lengthy discussion upon *Monococcus catarrhalis* infection? I wish to make clear the differentiation, as this infection resembles gonorrhœa in its clinical manifestations and symptomatic characteristics. I believe this condition is frequently mistaken for gonorrhœa. In the majority of cases, when the discharge is cleared up in a few days with simple treatment and the surgeon flatters himself on his ability to handle cases of gonorrhœa, he may have been dealing with this simple infection.

In differentiating between simple and specific urethritis the history of the case is important, for when correct evidence can be obtained regarding the period of incubation it is of value. In gonorrhœal infection it will be found from several days to ten or twelve days, most frequently from seven to nine days, whereas *Monococcus catarrhalis* infection most frequently occurs from a few hours to two or three days, and will clear up rapidly under adequate treatment.

Other conditions which produce discharges from the urethra are intra-urethral chancre and acute exacerbations of chronic urethritis, prostatitis, etc., which have been considered healed. It is many times difficult to diagnose urethral chancre from the clinical evidence, but the microscope and culture again play an important rôle. Wassermann reaction will not be of help, as it may be too early for this test to show.

Presuming, therefore, that we have a typical, clear-cut case of urethritis, with a well-defined history and a characteristic symptomatology, discharge of pus from the meatus, which is red, swollen, and œdematosus, urethral burning on micturition, with a peculiar drawing sensation along the canal, with diplococci found in the pus microscopically, which are Gram-negative, intracellular, which will not grow on ordinary culture media within twenty-four hours, which do grow upon special media, then, and then only, it is certain that we are dealing with a specific urethritis.

From the complications and sequelæ of gonorrhœa which come under the care of the specialist for treatment it is evident the treatment of acute anterior gonorrhœa is either unskilful, ignorant, or both. Both the physician and the patient may be in error. When some of our modern teaching regarding treatment of gonorrhœa is both illogic and unscientific, what can be expected? Rules are laid down whereby the physician is instructed to never begin local treatment of acute gonorrhœa until the acute symptoms have abated. This method has come down to us through a decade or more of teaching, and has done more harm than anything else in preventing scientific advancement in this work.

We have to deal with an infection produced by a specific organism which soon burrows into the underlying structures and there produces marked pathologic changes. Why, therefore, should treatment be delayed? Delay surely increases the area of infected mucosa and also endangers the posterior urethra to infection and involvement also of the more important structures, as the prostate, seminal vesicle, and epididymis, which will surely follow, thus producing serious complications and grave sequelæ.

It has been the teaching, also, that posterior urethritis should not be considered a complication, but is the natural course of the disease. This is absolutely true if the case is allowed to progress without adequate treatment. From observation and treatment of many cases I disagree with this teaching. I thoroughly believe that with proper treatment posterior involvement will rarely occur, and I am also thoroughly convinced that posterior urethritis should be considered a complication, and a very annoying and serious one at that.

What do I mean by adequate treatment?

I have said above that we have to deal with a specific infection which usually is a surface infection early, localized in a small area in the anterior urethra which ordinarily can readily be reached with local applications. There are no logical reasons why we should treat gonorrhœa otherwise than surgically. The patient should be instructed to consult the physician just as soon as possible after he has noticed his discharge, thus preventing him from taking treatment suggested by friends or prescribed by druggists to his detriment.

Treatment should be administered at the earliest possible moment,

just so soon as the patient presents himself and so soon as the diagnosis is properly made.

It has been my practice for ten years at least to begin treatment immediately; this consists in hand injections, always administered personally, and never left to the patient, unless the circumstances are most extraordinary, even though the symptoms are of only a few hours' duration.

The earlier the treatment is begun, the shorter the duration of the attack and the less liability to complications and sequelæ.

The reason for haste in the treatment of these cases is apparent. The sooner the gonococci are attacked the better for the urogenital tract of the patient.

The reason for personal administration of these injections is the total lack of experience and judgment of the patient necessary for the proper technic, no matter how much experience or how capable the patient may think himself.

I have never seen a patient properly give himself an injection. It is a rare occurrence for the physician to carefully instruct the patient in the proper method to employ, and even then the patient is very liable to be careless about following his instruction. Is it any wonder, then, that the patient who treats himself invariably does himself more harm than good?

The *modus operandi* as followed in my practice is simple but strenuous. The patient is instructed, after slides have been made for examination, to pass his urine into two glasses, six or eight ounces in the first and the balance in the second. If the urine in the first glass is cloudy and opaque and the second clear, one can with a reasonable degree of certainty depend upon the fact that the anterior urethra only is involved.

The patient is then placed upon the table in the dorsal position. The penis is examined, particularly as to the meatus. If this is below 16 F., a meatotomy must be done immediately, cutting the meatus up to 28 or 30: this will prevent blocking of the discharge and will reduce the chances of posterior infection to a minimum.

If everything is normal, an injection is given into the anterior urethra with the use of a syringe which holds about 6 or 8 Cc. This is fitted with a detachable soft-rubber nozzle. These nozzles can be

FIG. 1.

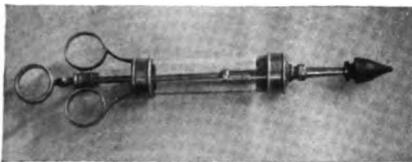


FIG. 3.



FIG. 2.



FIG. 4.

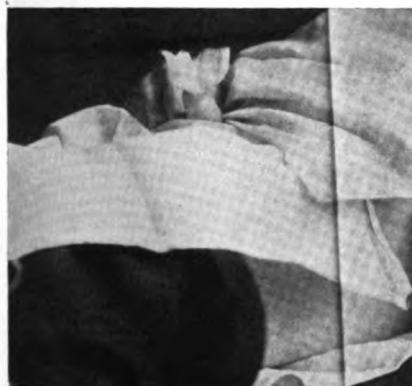


FIG. 5.



FIG. 1.—Syringe employed in administering hand injection to anterior or anteroposterior urethra.
Soft-rubber nozzle may be detached. These are sterilized by boiling.

FIG. 2.—Method of injection in anterior urethra.

FIG. 3.—Patient holding injection within the urethra. Note how this is done by the pressure being
at the meatus.

FIG. 4.—Method of dressing penis to allow free drainage and to prevent soiling clothes.

FIG. 5.—Incorrect method of holding injection in the urethra.

FIG. 6.



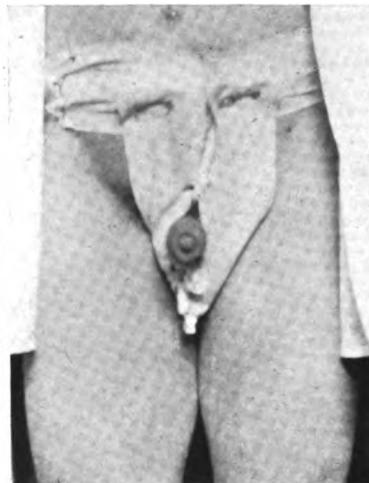
Showing method of passing soft catheter into the bladder. Here the hands do not touch the part of the instrument that enters the bladder or urethra. It is passed by a twisting motion which worms it forward.

FIG. 8.



Examination of the prostate and vesicles with the forefinger of the right hand in the rectum and with the left hand making suprapubic pressure. Patient in the dorsal position.

FIG. 7.



Suspensory bandage in place, showing the great amount of elevation of the testes which is essential for relief.

FIG. 9.



Examination of prostate and vesicles with forefinger of left hand, right hand making suprapubic pressure. Patient in the extreme lithotomy position.

easily sterilized by boiling, thereby overcoming the dangers of contamination. (Figs. 1 and 2.)

The penis is grasped by the left hand, the meatus separated by the thumb and forefinger, the nozzle gently inserted and the injection allowed to gently and slowly trickle into the canal: no force is necessary; in fact, it is contra-indicated. The anterior canal is filled to slight dilatation, which can be readily felt by the fingers of the hand grasping the penis. The injection is then discontinued and the patient shown how to grasp the penis as close to the meatus as possible, with just sufficient pressure to retain the fluid. He holds the injection within the urethra for at least ten minutes. The injection is allowed to pass out into gauze or cotton, and a protecting gauze covering placed over the meatus. The patient is instructed to hold the urine for at least two hours after treatment. (Figs. 3, 4, and 5.)

In severe cases the patient is instructed to return three times daily for treatment; in ordinary cases twice daily will suffice. The solutions that are employed for the injection may be any of the milder silver salts, as protargol, 1 to 2 per cent.; argyrol, in full strength; albargin, 1 to 2 per cent., etc. I have employed as routine for eight or ten years 2 per cent. solution of nargol and found it most satisfactory. The treatments for the second day are usually the same as for the first. The discharge should be examined microscopically daily, and when the discharge has ceased, with no evidence of gonococci in the shreds in the urine, with only a few pus and epithelial cells, the treatment should then be changed. When this occurs the condition of the urethra needs stimulation to restore it to the proper tone, as there is lowered urethral vitality. Here we employ anterior irrigations of hot potassium permanganate solution, 1-8000; zinc-sulphate solution, 1-6000; pieric acid, 1-8000. Generally I have better results with potassium permanganate as a routine. In a few days, with this form of treatment given daily, we see the shreds and particles rapidly disappear from the urine.

If the treatment is carefully followed as here outlined, where the infection is primarily anterior the posterior urethra will rarely become involved and the patient will be saved from the annoyance, discomfort, and dangers of posterior urethritis, and the duration of the attack will be surprisingly short. It is remarkable, in many cases, to see the

benefits of this treatment. It must not be forgotten that it is absolutely criminal to instrumentate an acutely-inflamed anterior urethra.

The patient should be instructed in the proper hygienic measures necessary. Cleanliness is essential; cotton should not be used, as it acts as a plug and prevents free drainage from the urethra. The patient is advised concerning the care of the hands and the dangers of getting any of the pus in the eyes. He is told to immerse the penis for ten minutes twice daily in hot water. He is told to keep off the feet as much as possible, get plenty of sleep, and refrain from sexual excitement of all kinds. Alcohol is absolutely forbidden. The patient is always instructed in the proper hygienic measures necessary. These features are emphasized strongly so as to impress the patient with their importance. He is told to eat the simplest of easily-digested food; to obtain at least eight hours of sleep; to refrain from exercise of all forms; to bathe once a day in hot water, sitting in the tub for at least twenty minutes. The bowels must be regulated so that they move at least once daily.

Internal treatment I consider of little importance. I have discarded the old methods, such as the use of santal-wood oil, cubebs, and copaiba. As a rule, I prescribe five grains of salol three times daily prior to eating, and five grains of sodium benzoate after eating. I am particularly pleased with the apparent efficacious results from the use of the cap. arhovin M iv, two given three times daily, as a substitute for the above. Water is my mainstay. If the patient is able to afford it, I prefer bottled water of alkaline reaction, but ordinary water is good. The patient is instructed to drink at least twelve glasses daily; fifteen would be better. After the first week internal medication is usually not necessary.

The most frequent complication of acute anterior urethritis is involvement of the posterior canal. Here, as well as in the anterior urethra, we must exercise every effort to clean up the condition as rapidly as possible to prevent progress of the infection.

Posterior infection is usually readily diagnosed, both from the symptoms and from the characteristic appearance of the urine in the two-glass test. The patient will complain of a frequency of urination as often as every fifteen or twenty minutes, as well as an inability to hold the urine when the desire strikes him. The two-glass test will show that both glasses contain pus, are cloudy, and usually opaque.

FIG. 10.



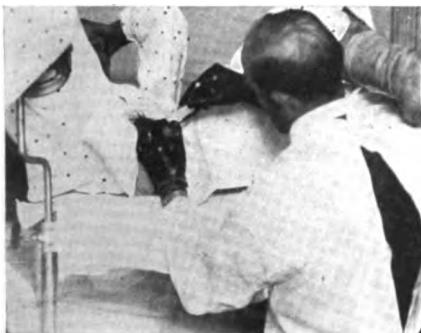
Examination of prostate and vesicles with forefinger of right hand in rectum and left making suprapubic pressure. Patient leaning on his elbows over the end of the table. This position is considered the most practical.

FIG. 11.



Position of patient for urethroscopic examination of anterior urethra. The urethroscope in position. Application may be made to localize condition in this portion of the canal, as is being done here.

FIG. 12.



Position of patient for urethroscopic examination of posterior urethra. The deep urethroscope in position. The urethra may be treated locally, as is here being done.

FIG. 13.



Position of patient for urethral irrigation. Triangular waste-pan between patient's legs. The irrigating cut-off and nozzle is a modification of that used by Ayres. Here it is made of metal, with the exception of the detachable nozzle, which is of hard rubber.

FIG. 14.



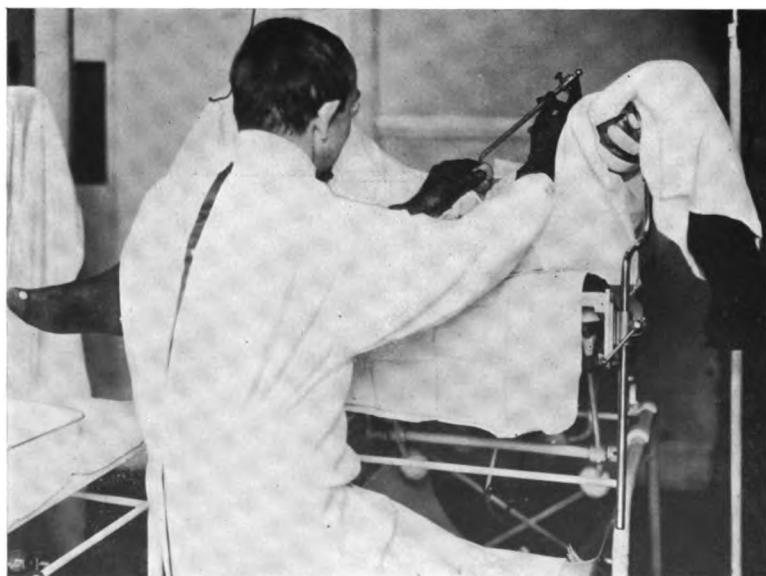
FIG. 15.



Syringe employed and method of giving deep injection. First position. The instrument is started in a line parallel to Poupart's ligament. The beak, therefore, passes downward along the side of the urethra. The barrel holds about 10 Cc.

Second position. The instrument takes the natural curve of the urethra almost without guidance.

FIG. 16.



Position of patient for cystoscopic examination. Beginning the passage of the cystoscope, first position.

The treatment here is similar to that in the anterior urethra. Hand injections are used, never, however, administered by the patient. Here we employ a syringe of 20 Cc. capacity, fitted with a soft-rubber nozzle, so that not only is the anterior urethra filled, but we have sufficient to fill the posterior urethra as well. The injection is gently given and the patient is told to make the endeavor of passing the urine; this produces muscle relaxation, and the solution will run easily, without using force, into the posterior canal. The penis is grasped similarly as in anterior treatment. The entire urethra is filled. The meatus is held by the patient to prevent the solution from running from the urethra; this is held for from five to ten minutes. It will be necessary to give two or three treatments daily. The same solutions are employed that are used in the treatment of anterior conditions. The posterior involvement will clear up surprisingly; the symptoms may entirely disappear after a day or two of treatment, and the second urine becomes clear again. Just so soon as this occurs stop posterior injections and give all of your attention to the anterior urethra. The same form of hygienic directions and internal medication is prescribed for this class of patients.

One might say that there will be difficulty in having patients come as frequently as three times daily. I have no trouble in this respect. I give my patients to understand that they place themselves under my care, and unless they want to follow directions to the letter I do not care to take their cases.

Aside from posterior urethritis, the most frequent complications of anterior urethritis are phimosis, paraphimosis, peri-urethritis, abscess of the glans of Littré, and occasionally inguinal adenitis of a suppurative variety. Phimosis may occur where the prepuce is unduly long or unduly tight. The part becomes swollen and oedematous, and it is difficult or impossible to retract the prepuce over the glans. Hot applications are of service. If the oedema is severe, multiple punctures with a needle will relieve the condition. If the swelling continues and the phimosis is not reduced by any of these methods, I do not hesitate to do a dorsal slit or a complete circumcision. Paraphimosis is fortunately not so common a complication; here the prepuce is retracted well over the glans, becomes oedematous and swollen, and cannot be reduced. Manipulations will sometimes bring it forward. This may be done by grasping the penis between the first two fingers

of each hand, and by gently pulling forward with the fingers and pressing upon the glans with the thumbs the prepuce may be brought forward. Here, also, hot applications and multiple punctures may be of service. If it is impossible to reduce it and there is much constriction on the dorsal surface produced by the swelling, it will then become necessary to cut the constricting band. This is best done on a grooved director, so that the dorsal vessels will not be injured. If the constriction is not relieved, marked pressure of the dorsal vessels is apt to produce gangrene, sloughing, and marked infection, a very serious complication.

Since the advent of beginning treatment of the acute stage early, peri-urethritis and abscess of the glans of Litré are not so commonly met with; however, occasionally, no matter what precautions are taken, the surrounding tissues of the urethra may become infected, and we then have the patient complaining of those annoying symptoms, painful erections, with bending of the organ, indicating chordee. For relief of this condition the active treatment of the urethritis is pushed. The patient is told to immerse the penis in hot water twice daily for from ten to fifteen minutes. At night he may apply an ointment composed of equal parts *ung. belladonnæ* and lanolin to the under surface of the penis. If the chordee is persistent, occasionally it will be necessary to use opium and belladonna suppositories at bed-time for the relief of the pain. Fortunately the condition clears up rapidly as the infection of the urethra clears up. Rarely do we see peri-urethral abscesses owing to the treatment that is followed, but they do occasionally develop, and it is usually the glans of Litré at the fossa navicularis that becomes involved. These soon form small abscesses, which are evident on either side of the frenum at the corona. The pain is usually severe and produces considerable annoyance to the patient. When this occurs it is always best to incise externally and drain after a thorough application of iodine, or carbolic followed with alcohol. Internal incision through the urethra is not employed, as a rule, for fear of further infection or extravasation of urine. By all means open and drain; do not allow these abscesses to rupture spontaneously, as the end result will be a urethral fistula, which is very difficult to heal. As a rule, the radical operation will be followed by perfect healing.

FIG. 17.



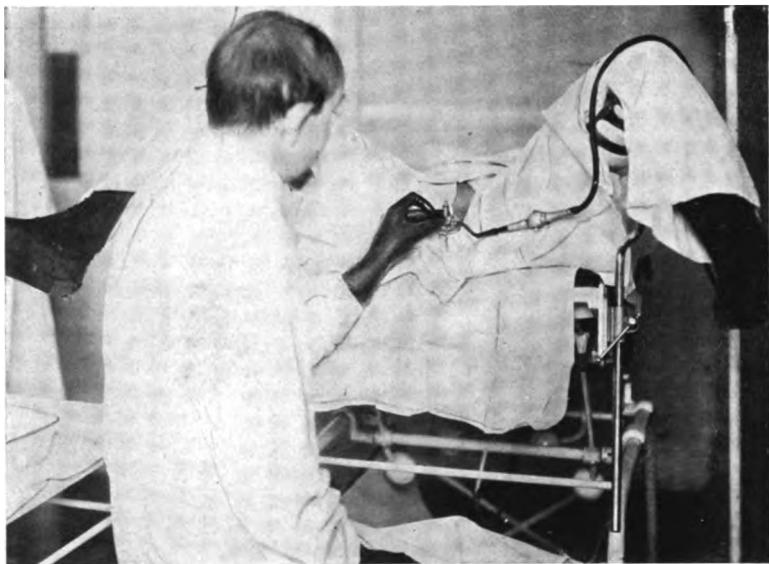
Passage of the cystoscope, second position, the external end being brought well down between the patient's thighs to allow the instrument to slip into the bladder.

FIG. 18.



Irrigation of the bladder directly through the instrument, thumb held over the external opening of the instrument, the obturator having been removed.

FIG. 19.



Flushing the bladder until the return flow is clear. Bladder is then filled to enable an observation of its walls.

FIG. 20.



Position of instrument and operator in catheterization of the ureters.

Inguinal adenitis is an occasional complication, but suppuration is usually aborted. Application of iodine will usually suffice; if, however, suppuration does occur, free incision with drainage is indicated.

Another complication of anterior urethritis which occasionally makes itself evident, particularly where the treatment of acute anterior gonorrhœa has begun too late, is that of acute infection of Cowper's gland—acute cowperitis; this, for the most part, is a late manifestation. The patient complains of pain, either mild or severe, with a fulness, in the perineum, made worse by exercise or by defecation. The swelling in the gland may readily be mapped out with the forefinger in the rectum and the thumb on the perineum. When this condition occurs the patient should be put to bed, and hot applications applied to the perineum; opium and belladonna suppositories *per rectum* to relieve the pain if it is severe. It is recommended by some of the text-books to stop all local treatment of the urethral condition. I cannot see the logic of this suggestion. I prefer to continue treatment, being sure that the urethra is well filled at each injection. I am thoroughly convinced that the dangers of abscess formation in this location will be less if urethral treatment is continued; however, abscess will sometimes occur, no matter what precautions are taken. The onset is usually ushered in with a chill, with increased swelling and pain, followed by a rise in temperature to 101° to 103° F. Redness and swelling may soon be recognized in the perineum. Owing to the non-elastic structures of the perineum there may be marked pressure which will result in urinary disturbances, characterized by frequency of micturition with pain, with difficulty of starting the stream, or even occasionally with complete retention. If proper treatment is not instituted we have the abscess rupture spontaneously either in the urethra, rectum, or perineum. This should not be allowed to occur, as fistulae will follow which are difficult to cure. Abscess of Cowper's gland should be treated similarly to an abscess elsewhere, by free incision and drainage. The incision should be made through the perineum and may, as a rule, be done under local anaesthesia. Postoperative treatment consists in overcoming the infection and allowing it to heal gradually from the bottom outwards. This may take a week or ten days to accomplish. At the same time local treatment must be continued *per urethra*.

One of the most dreaded complications which may arise during

an attack of acute gonorrhœa is that of gonorrhœal arthritis. This usually arises during the acute stage of the urethral involvement, most commonly during the third week of the infection. I have not seen gonorrhœal arthritis develop in a case of acute infection where I have begun treatment within twenty-four hours after the discharge began—another argument for the early commencement of treatment in these cases.

The condition may develop in one joint or may be polyarticular. Space will not allow me to go into detail regarding various forms and varieties of this condition which are demonstrated clinically. So soon as the pain and swelling are noticed by the patient he should be put to bed and absolute rest of the part affected instituted, which is best accomplished by complete extension. Extension will produce marked benefit, relieve the pain and separate the articular surface in the joint—a valuable feature to be considered. Murphy has recommended injection of the joint with glycerine and formalin. Personally I have never had occasion to use this method, nor have I ever seen an ankylosis following gonorrhœal arthritis where early treatment has been instituted.

Strenuous treatment of the existing urethritis must be carried out. Local treatment to the parts, as the application of heat or ointments, may relieve the pain to a degree. Internally the salicylates have been recommended. I depend almost entirely upon the use of anti-gonococcic serum, which I consider almost a specific; however, I am in the habit of administering larger doses than are usually recommended. It is not uncommon to inject from 5 to 10 Cc. as an initial dose, to be repeated within twelve hours if necessary, followed by daily doses of 2 Cc. if the condition is not markedly improved. I have seen a severely affected joint causing the patient considerable discomfort clear up from one injection of serum. *Do not forget to treat the local urethral infection. This is absolutely essential.* Gonorrhœal vaccines have been recommended, but I cannot obtain the same universally good results as from the serum. Here one must depend upon the stock vaccine, as it would require too long a time to manufacture the autogenous variety. I feel that in joint involvement the application of vaccines is contra-indicated, as in other acute infections.

Systemic gonorrhœal infection, as endocarditis or myocarditis, fortunately is rare. The gonococcus may be found in the blood, and bac-

FIG. 21.



Method of removing the cystoscope, feeding the catheters into it as it is removed, so that they are not withdrawn as the instrument is removed.

FIG. 22.



Method of lavage of the renal pelvis with syringe for this purpose. Irrigation of the pelvis should be done as routine following catheterization so as to prevent the dangers of infection.

FIG. 23.



Acorn tip bougie examination of the urethra.

FIG. 24.



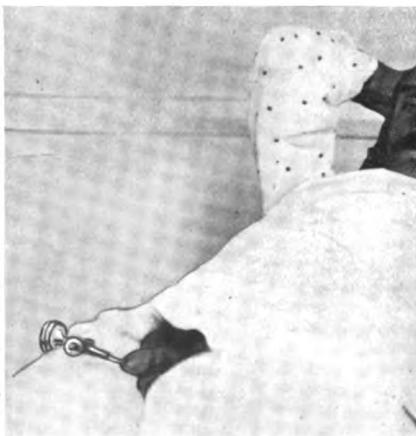
Filiform examination of the urethra. A number of filiforms are passed down to the constriction. Manipulation with one at a time is done, which may allow the filiforms to pass through the constricture.

FIG. 25.



Anterior urethral dilatation with the anterior Kollman dilator. Instrument can be held by the patient.

FIG. 26.



Posterior urethral dilatation with the posterior urethral Kollman dilator.

terial growths may be made from blood culture. Here absolute rest is essential. Marked attention to the urethral condition and the serum form of treatment are indicated. Medical treatment is also necessary.

I have already shown that a posterior urethritis is a complication well to be avoided, as the adjacent tissues may become involved. I know of no condition which may arise which will give the physician more concern and produce greater discomfort to the patient than acute infection of the prostate. I will not have sufficient space to go into a detailed description of this condition relative to the pathology.

Infection of the prostate is readily demonstrated from the clinical symptoms and signs. Here the symptoms associated with acute posterior urethritis become exaggerated, the urinary disturbances are more marked, with greater pain and burning associated with the act of micturition. The urine is always, both in the first and second glass, quite cloudy, due to the pus; besides, there is usually a dull pain in the perineum and in the rectum, the patient complaining of a sensation of a mass in the rectum. There is always difficulty of urination, which may even develop into complete retention. The diagnosis can usually be confirmed by rectal examination. The prostate can be felt to be enlarged, hot, soft, and exceedingly tender and sensitive on pressure. The general size and shape of the organ depend upon the variety of involvement. The onset may be accompanied with a chill, followed by fever. Some cases of acute prostatitis fortunately undergo resolution with a rapid cessation of symptoms, but the usual development tends toward abscess, chronic prostatitis, or both.

Here, as with other complications, I believe that the greatest good follows the continuation of our local urethral treatment rather than to stop treatment, as recommended by some of the writers. When the prostate becomes acutely infected the patient should be put to bed. Hot sitz baths are followed by relief. Hot rectal injections are excellent; opium and belladonna suppositories if the pain is great. *Massage of the prostate is absolutely contra-indicated.*

If retention occurs and catheterization is necessary, the procedure should be done with the greatest care, as severe trauma may follow careless instrumentation. It is better to leave the catheter in place rather than take a chance of repeated instrumentations. (Fig. 6.)

The development of a prostatic abscess is usually associated with a rather severe chill, followed by temperature as high as 104 or 105° F.

The urinary symptoms are all increased. The patient has more pain. The mass-like sensation of the rectum is increased. Examination *per rectum* shows a large, very soft, usually slightly fluctuating mass involving the prostate, either one or both lobes.

Just so soon as the diagnosis is made treatment should be carried out, consisting in a radical surgical procedure. The abscess may go on to spontaneous rupture, but this is not desired; fortunately when this occurs it usually ruptures into the urethra, evacuation takes place, and an ultimate cure follows only after a prolonged chronic stage with much treatment. Occasionally the abscess ruptures into the rectum; this is undesirable, as the result may be a urethrorectal fistula, one of the most difficult conditions to remedy that we have in genitourinary surgery. It has been suggested that the abscess can be opened intra-urethrally; this procedure I do not recommend, as a long, chronic stage may ensue. I prefer to attack the abscess through the perineum, incising the prostatic capsule and evacuating the pus, followed by drainage. I am thoroughly convinced that the condition of the prostate will clear up very much more rapidly by following this technic. Here, too, we continue our anteroposterior injections for the treatments of the urethral conditions, thus endeavoring to eradicate the cause.

Acute seminal vesiculitis is not an uncommon condition associated with posterior urethritis and prostatitis. The symptoms of the condition are both constitutional and local. The former are demonstrated in a slight febrile movement with accelerated pulse, headache, constipation, and a general feeling of depression. The local symptoms are referable to the urogenital tract. There is usually pain in the perineum, a sense of fulness of the bladder, which continues even when that viscus is emptied, producing thereby considerable tenesmus. Pain may be referred to the sacral or iliac region. Pain on the right side may be mistaken for appendicitis. Conditions of the vesicles must always be considered in obscure abdominal pain. One of the most characteristic symptoms is increased frequency of micturition, both diurnally and nocturnally.

The treatment of acute vesiculitis is very similar to that recommended in acute prostatitis: hot sitz baths two or three times daily. Hot application to the rectum with the use of the psychrophore gives relief frequently. I do not believe that massage of the vesicles in acute

infections is warranted. Incision and drainage of the vesicles in this stage of the infection are usually not indicated. Fortunately the vesicles are not so frequently infected as the prostate. Here we have a posterior urethritis associated, so we must continue treatment of the urethral condition.

Acute epididymitis, either unilateral or bilateral, is one of the most dreaded consequences of posterior urethritis, and one which is exceedingly annoying to the patient, as it is accompanied with great pain, which usually incapacitates the patient. Involvement of the epididymis usually occurs during the second or early part of the third week or later.

Associated with the symptoms of posterior urethritis we have the patient complaining of a pain in the groin, followed by the same sensation in the testicle. Soon the pain becomes severe, with marked swelling of the epididymis. The pain is increased by the patient being on his feet or taking exercise. Usually there is not much fever, not over 100° , unless there is suppuration; then fever may reach 103° or 104° . The diagnosis is relatively easy: pain and swelling in the part following an acute gonorrhoea. *Per rectum* the ampulla of the vesicle can be palpated readily.

I will divide the treatment into prophylactic, local, and surgical, and will endeavor to bring to your attention some of the various forms of treatment that have been recommended for this condition. To my mind prophylactic treatment is of the utmost importance, for if this serious complication can be prevented we are thus able to shorten the original attack and reduce to a minimum the possibility of such sequelæ as sterility, chronic prostatitis and vesiculitis, and the tendency to recurrences of the inflammatory condition of the epididymis.

The prophylactic treatment consists in preventing posterior urethritis, and if this condition is already evident when the patient presents himself, strenuous treatment of the posterior urethra must follow. As epididymitis is a later complication, we have another forceful argument for beginning treatment of the original acute anterior urethritis at the earliest moment. If, however, epididymitis develops during the process of treatment, or the patient presents himself with an epididymitis, local treatment of the anteroposterior urethra should begin at once. It is my practice to give my patients daily treatments for the urethral condition with hand injections already described. It is better,

of course, to have your patients confined to bed, but it is difficult at times to have them do this if they can be possibly kept on their feet. I have tried to devise a treatment that will allow the patient to attend to his daily vocation. This consists in local applications with support of the testes. If the case is seen early I apply upon gauze the compound iodine ointment, which is placed upon the affected side of the scrotum, completely surrounding the affected area, and the scrotum is then well elevated by a suspensory bandage which I make for this purpose. It is constructed as follows:

A strip of four-inch muslin bandage, long enough to encircle the body around the waist, is placed in position and pinned securely in front by safety pins. Another piece of the same kind of bandage, about twenty-four inches long, is doubled so that the ends are equal; a small hole is cut near the edge of the bandage at the central point. A finger bandage, about thirty-six inches long, is run through this opening and tied by a slip-knot so that the ends are equal. We are now ready to place this portion around the scrotum. The two ends of four-inch bandage are fastened with a safety pin in front, and the two ends of the finger bandage, which have been brought back under the thighs, are tied to the bandage, encircling the body behind; this keeps the lower portion of the bandage from slipping up over the scrotum when the traction is made which produces the elevation. Then one or two holes are cut on either side of the bandage in front of the testicles, and these are tied together by small pieces of finger bandage, thus causing a complete covering for the scrotum, which will hold in place any applications which have been applied and will elevate the testes, so that all strain is taken off the cord. (Fig. 7.)

The compound iodine ointment is left in place until there is evidence of a distinct burning sensation. It is then removed, the scrotal surface cleansed with olive oil, and the ointment of lead iodide is profusely applied.

I recommend the use of a rectal psychrophore so that hot applications may be brought to the prostate and vesicles, which are usually involved in these cases. The advantage of an instrument of this kind is that it brings the heat to the affected part without allowing the water to enter the rectum, which usually produces purging with rectal tenesmus. This procedure should be performed at least three times daily, and can be done by the patient himself.

It must be remembered that the posterior urethral infection is the cause of the trouble, and that attention must be given this condition. Care, however, must be practised in giving the anteroposterior injection. In the majority of cases this form of treatment will suffice and the patient's condition will soon be improved.

Anti-gonococcic serum may be of considerable service in these cases in shortening the attack and reducing the amount of pain. Anti-meningococcic serum has also been recommended highly. I have had no personal experience with this serum, but can see no reason why it should be more serviceable than the anti-gonococcic serum. Other applications, such as strapping the affected side with adhesive straps, in my practice have not been accompanied with good results. Saturated solution of magnesia sulphate application to the swollen side gives relief and is used as routine by some surgeons. Painting the scrotum with iodine, silver nitrate, or guaiacol is not practised much any more, as the desquamation produced renders the part exceedingly sensitive and painful. An ice-bag to the scrotum after the suspensory bandage has been applied will give relief very rapidly in some cases.

There are, however, a small proportion of cases that develop unusually severe types of infection, where it becomes necessary to place the patient at complete rest. In some of these cases marked suppuration occurs, and here we must depend upon free incision and drainage for evacuation of the pus.

It has been recommended by some writers that every case of epididymitis is a surgical case, requiring exposure of the affected epididymis with evacuation of the pus, which many times is only of small quantity. I thoroughly believe that the open operation would be the treatment of choice in most of the cases. It is followed by almost instant relief of the symptoms, the pain and swelling. I find, however, that it is exceedingly difficult to have my patients consent to surgery if the condition can be treated otherwise, as they are anxious to keep the condition secret; therefore, other methods of treatment must be employed. Acute epididymitis is rather a rare occurrence in my practice; that is to say, developing in patients that I have had under treatment from the earliest possible moment. This proves that early treatment, applied by the surgeon himself, prevents, in the majority of cases, acute complications involving the deep urethra and its adjacent organs.

A further progression of the infection from the posterior urethra into the bladder may be a complication of gonorrhœal urethritis which will be accompanied by symptoms of the most annoying character. These are both constitutional and local. The former group are characterized by a mild febrile movement, headache, backache, suprapubic pain, and general malaise. The local symptoms are all urinary, shown by marked frequency of urination, with pain accompanying the act of micturition and continuing after the bladder is emptied; the frequency may be as often as every fifteen minutes, both by day and night. There may be both a microscopic and macroscopic haematuria. A few drops of blood may follow the act of micturition. Examination will show that both of the specimens by the two-glass test will contain pus; the second will usually show more pus than the first. If we use three glasses instead of two, all three samples will contain pus; usually the third will contain more pus than the other two.

Palpation over the suprapubic region elicits the fact that the bladder is tender and sensitive. Palpation of the rectum may show a normal prostate and vesicles, or there may be associated an inflammatory process of these organs.

The treatment of cystitis of gonorrhœal origin requires great care. The patient should be put to bed upon a liquid diet. The bowels should be thoroughly evacuated. Hot compresses over the suprapubic region may give relief. Local treatment is of the greatest importance. It must be remembered that instrumentation of an acutely-inflamed urethra or bladder is absolutely not to be considered, as it will increase the virulence of the condition. Treatment of the bladder will be just as easy as treatment of the anteroposterior urethra, and consists of hand injections given by the surgeon, of a quantity sufficiently large to completely fill the urethra and allow several cubic centimetres to run into the bladder, to be retained so long as the patient can comfortably do so.

The injection should be administered at least twice daily. Internally sodium benzoate, gr. x, three times daily, will be of service. Treatment will usually be followed with good results, and the acute condition rapidly disappears with a clearing up of the symptoms.

No matter what treatment is instituted, the bladder condition frequently may not improve and will develop into a chronic type of

inflammation. This I will consider under chronic infections as sequelæ of the disease.

The most important sequelæ of acute anterior gonorrhœa and its complications are chronic involvement of the organs and tissue which were acutely infected, stricture of the urethra, and pyelitis. Chronic gonorrhœa is an exceedingly large subject, and space will not allow of a complete discussion; however, I will endeavor to bring to your attention the most common forms with which we meet. The one cardinal symptom of chronic gonorrhœa where the tissues of the urethra are involved together with the prostate and vesicles is usually demonstrated by the condition commonly alluded to by both the patient and physician as *gleet*.

Gleet is characterized by a discharge from the urethra of a small quantity of mucopurulent character, noticed particularly in the morning or after urethral rest of several hours. Excessive alcoholic indulgence, sexual excitement, or both, have the tendency to increase this discharge. A stained specimen may or may not show typical gonococci, but will show staphylococci, colon bacilli, pseudo-diphtheria bacilli, etc., together with urethral epithelial cells, with more or less pus-cells. The urine will be full of shreds and particles of greater or less quantities, according to the portion of the urogenital tract affected and the extent of the tissue involvement. Microscopic examination of these shreds many times will demonstrate the gonococcus.

These are the type of cases that frequently are discharged by their physician as cured, who are exceedingly infectious, who become married, believing they are well, and who will invariably produce infection in their wives.

The diagnosis of the situation of the infected area is important, for without accurate knowledge of the tissues involved treatment must necessarily be inadequate. An examination of a patient suffering with chronic gonorrhœa must be very complete and thorough, as the exact findings must carefully be studied before treatment can be outlined. A complete history must be taken, which is of great help. This consists in going into detail regarding the past attacks of gonorrhœa, their duration and their complications, remembering that posterior involvement must be considered as a complication; the form of treatment given; whether recommended by the physician, friend, or

druggist; form of internal treatment, if any; date of the beginning of present attack; period of incubation, and variety of treatment used.

The present condition must be carefully studied regarding signs and symptoms: the nature of the discharge; the frequency of urination; whether or not there is pain associated in back or over the bladder; whether or not there has been haematuria; whether the patient experiences any difficulty in starting the urinary flow; if there are changes in the size of the stream, or whether there is dribbling of urine following the act. Patient must be questioned as to whether or not the symptoms are exaggerated by sexual excitement.

The patient is requested to remove the clothing, and a sterile suit of pajamas is given him to put on. The trousers of the suit are slit from waist behind to waistband in front, so that the genitals may be readily exposed for examination. He is taken into the examination room and strippings from the urethra are taken for slides and culture-tube inoculation. The slides and tubes are sent to my laboratory with the patient's name for a report. The slides are examined at once and a tentative report sent as soon as possible. The urine is passed into two glasses; these are likewise sent to the laboratory for reports. The patient is then requested to lean over the table, and with the forefinger of the gloved hand the prostate and vesicles are thoroughly examined and mildly massaged; the bladder is now completely emptied, the patient passing urine into a sterile glass tube. From this specimen cultures are made and a microscopic examination is also done. (Figs. 8, 9, and 10.)

The patient is now placed upon the table in the dorsal position. The external genitals are examined for abnormalities. The epididymis and testicles are palpated for evidence of former diseases. The urethra is palpated for the purpose of ascertaining if there has been any peri-urethral involvements. The prepuce, glans, and meatus are studied with care to clear up the evidence of trouble here. The inguinal glands are examined, as well as palpation of the bladder suprapublically; also both kidneys are examined by palpation for evidence of enlargements, tenderness, or malposition. After the external physical examination and notes recording the findings are made I then proceed with an internal examination.

The preliminary steps of an urethral examination consist in using acorn-tipped bougies, beginning, as a rule, with about 20 F. This

CHART I

SAMPLE OF OFFICE HISTORY CARD USED FOR RECORDS. THE REVERSE SIDE OF CARD IS PLAIN, AND NOTES REGARDING TREATMENT ARE MADE THEREON

Name..... Diagnosis.....

Address..... Age..... Referred by.....

Date..... Occupation..... Weight..... M. S. W.....

Family History.....

Previous History.....

Present History.....

Principal Symptoms.....

Pain.....

Discharges.....

Character of Urination.....

1st Urine..... 2d Urine 3d Urine.....

Genitals.....

Prostate.....

Seminal Vesicles.....

Urethra.....

Bladder.....

Residual Urine.....

Kidneys.....

CHART II
SAMPLE OF LABORATORY CARD USED BY THE WRITER

FROM THE LABORATORIES OF
 LEWIS WINE BREMERMANN, M.D.
 THE MONROE BUILDING.
Urine from the Bladder.

Clear or Cloudy.....	Color.....	Odor.....	Reaction.....
Sp. G.....	Albumin.....	Sugar.....	
Urea.....	Indican.....	Total Solids.....	
Crystals.....	Mucus.....	Connective Tissue.....	
Epithelia.....			
Red cells.....		White cells.....	
Microorganisms.....			
Casts.....		Other features.....	
URINE FROM RIGHT KIDNEY.....		URINE FROM LEFT KIDNEY.....	
Clear or Cloudy.....		Clear or Cloudy.....	
Reaction.....		Reaction.....	
Urea.....		Urea.....	
Crystals.....		Crystals.....	
Mucus.....		Mucus.....	
Connective Tissue.....		Connective Tissue.....	
Red Cells.....		Red Cells.....	
White Cells.....		White Cells.....	
Epithelia.....		Epithelia.....	
Casts.....		Casts.....	
Microorganisms.....		Microorganisms.....	
Remarks.....			

CHART III
REVERSE SIDE OF LABORATORY CARD

Cultures (Mixed Urine).....

Cultures (Right Kidney Specimen).....

Cultures (Left Kidney Specimen).....

Microscopic Examination of Discharges.

Urethra.....

Prostate, etc.....

Cultures.....

Examination of the Blood.

Red Cells.....

White Cells.....

Hæmoglobin

Wassermann.....

Noguchi.....

is passed along the urethra, a note made as to the areas of tenderness or obstruction. If twenty will not pass them successfully, smaller ones are used until one is obtained that will pass into the bladder. *For an examination of the urethra local anaesthetics must never be used, as anaesthesia will frequently mask the signs.* (Fig. 11.)

An endoscopic examination of the anterior urethra is next attempted, notes made as to the character and the area of inflammation, whether the sinuses of any peri-urethral glands may be seen, and if there is mucopurulent material seen coming from them. The position of the patient is now changed to the lithotomy position and a deep urethral examination made by the posterior tube; the condition of the prostatic urethra is ascertained, whether or not the urethra shows an old tear through which a prostatic abscess has ruptured. The condition of the vira-montanum is noted, the character of the mucosa, whether it is inflamed, granular, oedematous, etc. (Fig. 12.)

With the patient in the same position a cystoscopic examination of the bladder is made. The mucosa is examined for evidence of cystitis, ulceration, and other involvement. The ureteric orifices are studied for abnormalities.

In the majority of long-standing chronic cases, where there are histories of frequent acute relapses or apparently new attacks, as the case may be, I make it a routine practice to catheterize the ureters and obtain a sample of urine from each kidney in an absolutely sterile manner. These are cultured and examined microscopically. It has been surprising what a number of cases of pyelitis I might have overlooked if this form of examination had not been carried out routinely.

After an examination of this kind, with the history and laboratory reports, one can ascertain with almost absolute accuracy the seat or areas involved as the cause of the chronic symptoms. It is my practice to make a Wassermann test upon all cases, whether the history warrants it or not.

The sequelæ which involve the anterior urethra, and which are included under the head of chronic anterior gonorrhœa are infections of the deep structures surrounding the urethra, particularly noticed in the peri-urethral glands. The glans of Littré is frequently the seat of trouble, producing chronic discharge and frequently causing acute relapses. Palpation of the urethra, together with the urethroscopic examination, will demonstrate this condition.

Treatment consists either in local application through the urethroscope or injecting with a syringe, with a long needle curved at the end slightly so that it can be made to enter the sinus of the gland, a few drops of a solution of silver nitrate, five to ten per cent. in strength; or marked dilatation of the urethra with the anterior Kollman dilator, followed by irrigation of potassium permanganate, 1-2000, of the anterior urethra only, may prove of service; or the anterior urethra may be filled with an injection of one of the milder silver salts and retained for five minutes by the patient holding the meatus.

Local spots of inflammation associated with chronic discharge, or spots of granular tissue, may be treated by local application of 25 per cent. silver nitrate, or even 50 per cent. solution, directly through the urethroscope. Dilation with anterior Kollman, irrigations or injections are of service in this form of trouble. Much treatment over a rather long period may be necessary to control the condition. The physician must not grow discouraged, and must warn the patient that it may take a long time to clear up the infection.

Chronic cowperitis is treated locally through the urethroscope, or, better, by marked dilatation, followed by anterior injections of the milder silver salts.

One cannot be satisfied that his patient is well until all of the discharge is stopped and the shreds have completely disappeared from the urine and there is no evidence of pus or bacteria upon repeated examination.

Chronic posterior urethritis, unassociated with infection of either the prostate, vesicles, or both, very rarely occurs, therefore attention should be given not only to the urethra, but, after a diagnosis is properly made, treatment must be rendered the other organs as well.

If a patient has given a history of a period of frequency of urination and inability to hold the urine during some former attack of gonorrhcea, then one can conclude with a reasonable degree of certainty that the posterior urethra was involved, and if this has occurred, infection of the prostate or vesicles, or both, may be suspected and must be confirmed or excluded before a diagnosis is made.

The deep urethroscope will show an inflammatory condition of the posterior urethra, which is highly congested, sensitive, and usually quite oedematous, and may bleed upon the least instrumentation. Rec-

tal examination will elicit the fact as to whether or not the prostate or vesicles are involved. Space will not permit me to go into a discussion of the pathology of prostatitis at this time.

Presuming that we have a large, soft, tender, prostate, painful on deep palpation, what form of treatment is indicated? The routine outline to be followed consists usually of massage, dilatation, irrigation of the urethra, deep instillation of the urethra, hot application to the urethra through the urethral psychrophore, hot rectal injection by the use of the rectal psychrophore, and, last but not least, the vaccine form of treatment.

Massage is a procedure of the greatest importance and must be done properly. If improper methods are employed bad results are apt to follow. Massage should not be done oftener than twice weekly, and should consist in firm pressure made by the gloved forefinger inserted within the rectum, pressure being made beginning at the base of the gland, but moving the finger from side to side with equal pressure, withdrawing it gradually until the apex of the prostate is reached. Massage should not last more than a few minutes at the longest, two or three being sufficient, as a rule. I prefer to do this with practically an empty bladder, with just sufficient urine to allow for a collection of a specimen and washing out the massaged material. I am sure that much harm has been done by the instruction of so-called "milking the prostate," as this procedure consists in a prolonged and strenuous massage, thus increasing the irritability of the inflamed organ. I have heard physicians say that they have massaged the prostate for from ten to fifteen minutes. I think this is wrong. The massage should always be followed by a thorough irrigation by the Janet method, flushing not only the entire urethra, but the bladder as well. Potassium permanganate, 1-8000, used hot; silver nitrate solution, always made with distilled water, 1-12,000, or formalin solution, 1-2000, may be employed. Deep instillations of the milder silver salts may be substituted for the irrigations. (Fig. 13.)

I usually make a practice of seeing these chronic patients three times a week; at two visits the massage is given, followed by an irrigation or a deep injection, and at one visit the posterior urethra is dilated by the Kollman posterior dilator, followed by irrigation or injection. In some cases, those that are particularly irritable, I include the use of either the hot urethral psychrophore or rectal

psychrophore, or both. This seems to rapidly decrease the irritation and helps shorten the duration of treatment materially. (Figs. 14 and 15.)

Where the vesicles are involved, massage or stripping of these must be done. This, however, should not be oftener than once a week or once in five days at the most. In vesiculitis the hot psychrophores are of marked service. Irrigations or injections of the urethra should follow the massage.

Vasotomy with injections of argyrol into the vas has been suggested by Belfield, who claims to get excellent results. The vas, being filled, allows the fluid to back up into the vesicles, and this overcomes infection and clears up the symptoms. I have not been so fortunate in my results with this method of treatment as Belfield. My technic may be at error. It has not been my good fortune to see Belfield do one of these operations. Theoretically the operations should be followed by good results. Fuller recommends in chronic vesiculitis an operation consisting of a vesiculotomy with drainage. He claims good results following this method of treatment.

The operation of vasotomy is simple and can be made a part of the regular office routine. Local anaesthesia is all that is necessary. Fuller's operation is rather difficult and should not be attempted unless one is perfectly familiar with the anatomical landmarks.

Chronic infection of the urethra associated with the prostate and vesicle will all improve more rapidly if the vaccine form of treatment be combined with the local treatment. In all infections of these structures we usually have to deal with a mixed variety of infection. Autogenous vaccines are the vaccines of choice in every case, but these must be manufactured under the most favorable circumstances and administered with the proper technic to assure best results. The dosage and time of injection should be regulated by the reaction, which consists in local, focal, and constitutional phenomena.

The vaccines should be administered once in five days or a week, with successively increasing doses, regulated according to the severity of the reaction.

The local reaction is demonstrated by a slight redness, with more or less pain at the seat of injection. The focal reaction is demonstrated by a temporary exaggeration of the symptoms, and the constitutional reaction shows a febrile movement of about 1° , with headache and general malaise. All of these manifestations are increased

according to the severity of the reaction. The reaction should be mild in character and the successive dose should not be administered until all of the signs of reaction have disappeared.

It must not be forgotten that chronic conditions of the urogenital tract are difficult to clear up, and treatment is necessary over a long period.

Chronic cystitis may be a concomitant condition with infection of the urethra and adjacent organs. Here we have symptoms which point to the bladder, usually some disturbances of micturition. The microscope and cystoscope will readily clear up the diagnosis. Where there is a persistent frequency of urination both by day and night, with or without pain, with the urine cloudy as demonstrated in all three glasses, with usually the last glass more cloudy than the first or second, cystitis may be suspected. Microscopical urinary analysis of a catheterized specimen will show pus and bladder epithelium in quantity, which, together with the findings of the cystoscope, will confirm the diagnosis.

Treatment of this condition consists in daily irrigations. I prefer formalin solution as routine, about 1-8000; a thorough flushing of the bladder is done either by the Janet method or by a soft-rubber catheter. Following the lavage, about 5 Cc. of nargol, 2 per cent., is instilled into the bladder, and this is to be retained as long as tolerable. Internally sodium benzoate, gr. x, three times daily after eating, with urotropin, gr. x, before meals. Here, too, vaccine therapy is indicated, and is followed by the best results. Chronic infections of the bladder are for the most part mixed infections.

One of the most common conditions associated with chronic infection of the lower tract is a chronic pyelitis, varying from a mild catarrhal variety to the more severe purulent type. The condition is usually secondary to the primary condition below. The pelvis become infected through a haemogenous or a lymphogenous method.

In all attacks of chronic discharge from the urethra, or where there have been frequent relapses, particularly where the patient has received adequate treatment without results, pyelitis should be suspected and confirmed or excluded through catheterization of the ureters, with collection of samples of urine from the two kidneys; these are examined microscopically for pus and epithelium, and by culture growth for the variety of infection. Rarely has the gonococcus been grown

from pelvic specimens, but it is not uncommon to have a growth from other bacteria, such as the staphylococcus, colon bacillus, etc.

It is quite evident that the condition in the pelvis of the kidney must be eliminated before we can expect much benefit from treatment of the lower tract. This fact being overlooked in so many cases is the reason that many patients wander from one physician to another without receiving benefit.

The treatment consists in lavage of the renal pelvis, a method of treatment which has been followed by the most efficacious results during twelve or fourteen years of actual experience in my own cases. The technic of lavage is simple and is done through the urethral catheter after the ureters have been catheterized. Any of the mild silver salts in solution may be used for lavage in the same strength as they are used in the urethra or bladder. A 10 Cc. syringe is employed, fitted with a needle which slides readily into the opening of the catheter; 5 to 7 Cc. are injected into each side. *This must be done slowly and carefully, as sudden injection or sudden dilatation of the pelvis will produce a colic which is severe.* The fluid is allowed to drain before the second injection is used. Several syringefuls are used in each side. As the catheters are withdrawn the entire length of the ureters and urethra is flushed, thus preventing chances of mixing infection. Just so soon as the urine from the pelvis is pus- and bacteria-free, then treatment can be discontinued. (Figs. 16 to 22.)

It must not be forgotten that treatment should be carried on just the same upon the structures of the lower tract, and as the pyelitis clears up you can see exceedingly favorable improvements of the pathologic process here. Vaccine therapy is of service and will shorten the duration of the attack considerably. Autogenous vaccines manufactured with care and administered properly are the best to employ.

Where pyelitis is recognized and treatment followed it will be surprising in many cases how rapidly the infection in the lower tract will disappear. Pyelitis as a sequelæ of a primary gonorrhœal infection must not be forgotten as an associated affection, and excluded or confirmed, as the case may be, before the patient can hope to get well. The most frequent sequelæ of gonorrhœal infection, which, however, may not develop until long after the original attack to such a point as to be accompanied by symptoms, is that of stricture of the urethra. This type of involvement is classified under the variety

of acquired urethral strictures. The diagnosis of this condition is the important part of the study of the case, as treatment depends entirely upon the form, variety, extent, and location of the pathology.

Urethral discharges similar to the condition called gleet are usually one of the important signs of the disease and may make themselves manifest long before there are changes in the urinary process. In all cases of gleet there should be a suspicion of stricture as the cause. Before the surgeon should attempt an examination of the patient for this trouble he should remember the rules first taught by Otis, so that the normal relation of the urethra to the circumference of the penis will not be overlooked.

Penis circumference $2\frac{1}{2}$ inches, urethra circumference 26 French.

Penis circumference $2\frac{3}{4}$ inches, urethra circumference 28 French.

Penis circumference 3 inches, urethra circumference 30 French.

Penis circumference $3\frac{1}{4}$ inches, urethra circumference 32 French.

Penis circumference $3\frac{1}{2}$ inches, urethra circumference 34 French.

Penis circumference $3\frac{3}{4}$ inches, urethra circumference 36 French.

Thus it will be seen that an individual with a penis circumference of $3\frac{1}{2}$ inches may have a stricture of No. 25 or 26 F. productive of symptoms, yet the surgeon may overlook the condition as pathologic because that urethra will take a No. 25 or 26 sound and yet require a dilatation. The smaller sizes are important, because, if we consider 30 as the standard in all cases, an individual with a penis circumference of two and a half inches might be overdilated by the treatment, which will be productive of harm.

The urinary symptoms associated with stricture are usually frequency of urination, particularly noted diurnally with difficulty in starting the stream, with dribbling after the act is apparently finished, and by changes in the sizes and shape of the stream. Acute retentions are not uncommon complications. The most common seat of acquired strictures is at the bulbomembranous junction.

There are several varieties of strictures: the linear, like a small, narrow fibre of fibrous tissue encircling the urethra; the annular, like a broad band surrounding the canal; the irregular, fibrous formations of different intensities at different portions of the canal; the tortuous, as its name signifies, a winding variety produced by fibrous masses along the canal of greater extent than in the irregular form.

Strictures may be dilatable, hard, fibrous, undilatable, or resilient,

these latter fully dilatable but very retractable. (Fig. 23.) The diagnosis is made by direct examination through the urethroscope or by bougie instrumentation, using the acorn variety. A No. 18 or 20 F. passes the point of constriction, successively smaller sizes are used until one does pass, or, if No. 20 passes, successively larger sizes until one is found that will not pass. The acorn variety is used, for the stricture will contract behind the instrument, and upon withdrawing it the contraction of the fibrous tissue can be readily felt. By this method we can ascertain the number, size, variety, and location of the stricture.

Strictures may be exceedingly tight, preventing the passage of the smallest bougie, which is about No. 6 F. If this is the case, we must resort to filiform bougies. A number of these are lubricated and passed into the urethra to the point of constriction. By gentle manipulation one or more may be guided through and into the bladder. This type is known as a filiform stricture. (Fig. 24.)

Treatment of strictures are divided into: Rapid dilatation, gradual dilatation, continual dilatation, electrolysis, external urethrotomy, internal urethrotomy, combined internal and external urethrotomy. Rapid dilatation has been practically discarded, as the trauma induced by this method is usually followed by the formation of a greater amount of fibrous tissue, thus exaggerating the condition.

Gradual dilatation is the operation of choice and will suffice in about 95 per cent. of all acquired strictures. This method can be employed in all forms, even the filiform variety. It does not answer in non-dilatable or resilient strictures. As the name of the method signifies, the dilatation must be done in a gradual manner. The largest-size instrument is employed that will go through the constriction without force; this is followed up at subsequent treatments by larger sizes, increasing not more than two sizes at each sitting. (Figs. 25 and 26.) Metal instruments smaller than 14 F. are dangerous and should never be employed. Flexible, silk-elastic bougies of the olivary variety are the safest small instruments to use.

In the filiform variety, where only one or two can be passed, efficacious results may be obtained by continual dilatation, consisting of placing the patient in bed and having the instrument remain in place for from twenty-four to forty-eight hours. At this time more may be easily passed, and gradual dilatation may then be used with excellent results.

The method of electrolysis is simply mentioned to condemn it, as the results have not proved satisfactory. Urethrotomies, either internal, external, or combined, are only indicated where dilatation is not possible, and is the operation of choice in about 5 per cent. of the stricture of the acquired variety.

Internal urethrotomy is of service in stricture of the fore part of the canal. It is not safe to perform this operation at a point lower than 4½ inches from the meatus. The danger of cutting the artery of the bulb is great, and the hemorrhage here is difficult to control.

External urethrotomy is done either with a guide, where an instrument can be passed, or without a guide when it is impossible to get any instrument through the urethra. The former is not a difficult operation; the latter may be exceedingly difficult, as it may be almost impossible to locate the urethra. Suprapubic cystotomy with retrograde instrumentation may be a necessity in some cases. In retention due to a stricture do not traumatize the urethra by forceful or unskilled manipulations. If it is impossible to pass an ordinary catheter into the bladder a small urethral catheter may be tried. This will usually pass, and the bladder can be drained slowly by this method, a procedure to be desired, as it is harmful to relieve an overdistended bladder suddenly. Ureteral catheters are manufactured as small as No. 4 F.

If all catheterization proves a failure there is no harm in passing a trocar suprapubically and thus relieving the retention gradually. Not more than twelve ounces should be removed at one time. Instruct your patient that so soon as the canal is capable of taking a 30 sound they are not well for all times. *Once a patient has a stricture he will always have it.* No matter whether dilatation or urethrotomy is employed, the patient should be instructed to have treatment once or twice a year for the balance of his life to prevent a recurrence of the stricture.

No instrumentation of the urethra or bladder should be done without following it by irrigations or injections. This technic will, in the great majority of cases, prevent the occurrence of urethral fever, which is a very annoying and disagreeable condition. Space will not allow me to go into further discussion regarding the rare sequelæ, as sterility and impotency, which subjects would require many pages to cover adequately. The one great important feature with which I will

conclude my discussion is: "When are we sure that a patient is cured of his gonorrhoea and when it is safe for him to marry?"

These questions are not only important from the standpoint of the physician, but from the standpoint of the layman as well. These problems are brought to me daily by patients who have had past trouble and are anxious to marry. These patients are put through the regular routine examination. If there are lesions at any point in the urogenital tract which are productive of symptoms, or there is pus or bacteria found in the urine or in the shreds, which may be seen in the sample, I absolutely forbid the patient marrying.

I usually discharge a patient as cured when the urine is free from pus and bacteria and when there are no lesions to be found in the urogenital tract after repeated examinations. I always use the gonorrhoeal complement-fixation test. I feel that this test is as satisfactory for gonorrhoea as the Wassermann is for syphilis. It is my usual practice to discharge patients when all pus and bacteria have disappeared and the complement fixation is negative. *I give my consent to marriage when these conditions remain negative over a period of three months.* During this time the patient lives his ordinary method of life and is examined about three times. If we find negative results over this period, then we can feel sure that his marriage will be safe.

Another important topic that will not only interest physicians, but will prove of great benefit to the layman, is the preventive or prophylactic form of treatment. I have employed a routine technic for this form of treatment for a number of years with strikingly surprising results. Patients who prior to their employment of the principles of prevention were continually becoming infected with gonorrhœa now have no trouble. My technic consists in the following direction given to the patient: Immediately after intercourse the urethra should be flushed by the process of micturition, to be followed by a thorough washing not only of the sexual organs, including the scrotum, but the suprapubic region and the thighs. I prescribe for this purpose a germicidal soap of 2 per cent. strength. The patient is requested to come to my office within twelve hours after the exposure. He is again requested to pass the urine. He is placed upon the table and a few drops of formalin solution, 1 Cc. to the ounce of sterile water, are dropped into the meatus, which is held apart by the thumb and fore-

finger of the left hand. The meatus is then grasped by the patient and the solution held in the urethra for a few minutes. There will be quite a severe burning pain, but this soon passes away. Many of my patients, I am confident, have escaped infection by following this routine.

In conclusion I wish to state that I have endeavored to show that most of the complications and sequelæ of gonorrhœa are absolutely aborted in the vast majority of cases by the proper treatment of the acute type. If treatment is followed as outlined here the short duration of the attack and absence of complications will be particularly gratifying to both the surgeon and the patient.

ATAxia: REPORT OF FIVE CASES OF ATAXIA OF TABES, TREATED BY DR. WM. J. M. A. MALONEY'S REEDUCATION METHOD, WITH OUTLINE OF METHOD USED

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UP to the time when Frenkel, in 1897, organized and popularized his exercise method of reeducating ataxic tabetics, little or nothing was done to relieve this distressing symptom, ataxia.

These exercises depend upon the reeducation of muscle groups and the extremity as a whole by graded coöordinated movements. The patient is trained to stand at first and to use the eyesight to compensate for the loss of muscle sense. Simple training movements are then added, such as touching a figure marked upon the floor with the toe; later walking, the patient following footprints or lines marked out upon the floor. These impressions follow either a straight or snake-like course. As the patient improves, more complicated walking exercises are devised, and, finally, walking up and down stairs is taught along the same lines.

By this method of reeducation a great many patients improve to a greater or lesser extent; there are a few who improve to a degree that permits unaided walking in public. Complete failure is exceptional, but relapses are common.

The work of Dejerine and Martin, Benedikt, Förster, Maloney, and a great many others who report their observations in cases of tabes in which there was a high degree of optic atrophy shows without doubt that the resulting diminution in sight was accompanied by a benign influence on the existing ataxia. Frenkel, in his "Monograph on Tabes," although mentioning that "Tabetics who lost their sight at an early stage of the disease seldom developed much ataxia, and developing blindness is accompanied by a marked improvement of the ataxia already present," nevertheless insists that sight is indispensable for the successful reeducation of ataxic tabetics.

In Maloney's method of reeducation all of the exercises are taught blindfolded; consequently, when a patient learns to move under those

conditions, he is far more confident in his movements later, and should he at any time be overtaken by darkness he is less likely to become demoralized, as the average tabetic does under those conditions.

The Frenkel treatment takes practically no cognizance of the effect of fear upon ataxia. We all know the variations of ataxia in a tabetic from day to day; he walks better at home than in public, decidedly worse when he is laboring under some emotional disturbance, such as anger, grief, fear, etc. These variations in his ataxia are obviously independent of the actual pathologic lesions present. They are unquestionably due to the psychic elements that enter into the composition of the ataxia of tabes; these factors contribute largely to the maintenance of ataxia and should not be neglected in the treatment of this symptom.

Fear, among the psychic elements, is of such importance that it merits special consideration. Tabes, as we know, is a disease associated with lightning pains, neuralgias, crises, bladder trouble, impotence, perhaps diplopia, incipient blindness, commencing deafness, and, above all, ataxia. This group of symptoms has a tremendous influence in establishing and perpetuating a state of anxiety, of mental stress, and of fear. The many perils to which an ambulatory tabetic is daily exposed tend to become more and more harassing.

Fear complexes readily form, which, as they become elaborated, tend to succeed one another and to produce an unrelieved state of perturbation.

The attitude of a typical ataxic is partly a motor expression of his fear. His broad base, his constant use of his stick, his gaze fixed on the ground, are all partly fear effects. His fear increases on the slightest provocation, and as he dreads his ataxia increases: at first he fears all he sees, then he begins to fear what he can not see. Just as fear increases ataxia, so reassurance diminishes it.

The modified shoes and plates correcting arch defects have an important tranquillizing effect. Blindfolding, relaxation, and movements all encourage. The removal of ataxia is itself a treatment of fear. For immediate combating of fear it is valuable to explain to the patient the origin of his fears, to teach him to analyze a fear as soon as it arises, and to subdue it. Deep breathing is his best weapon for this purpose. So long as he breathes deeply he cannot become much afraid. The James Lange theory that the fear is caused by

visceral changes, and not the visceral changes (quickened heart and respiration rate) by the fear, may not be wholly true, but if a person breathes deeply and thus keeps his heart's action from becoming unduly rapid he cannot develop any great degree of terror.

By using muscular relaxation we not only produce a tranquillizing effect upon the various emotional elements such as fear, depression, etc., that enter into the composition of ataxia, but in addition we have a powerful agent to combat fatigue, to which these patients are particularly susceptible.

Of the value of coöordinated movements there can be no question. Leyden, Goldschieder, Frenkel, and the Swedish school of gymnasts showed that what prevailed in health did not cease in disease where function of movement was disturbed.

By the foregoing remarks I wish merely to point out the advantage of "Maloney's Method of Reëducation," not in any way to minimize the value of "Frenkel's Exercises."

The following is a brief outline of the method used in treating the cases here reported:

I. MEDICINAL

Appropriate measures are taken for information regarding the activity of the original infection. Should the Wassermann reaction in the blood or spinal fluid be positive, a thorough course of mercury and iodides is indicated. In his work on intraspinal injections of "Mercurialized Serum in the Treatment of Cerebrospinal Syphilis," Dr. Charles M. Byrnes, of Johns Hopkins University, has shown that of the patients who had received mercury, hypodermatically, by mouth and by inunctions, only those receiving inunctions showed any evidence of mercury in the cerebrospinal fluid, and then only in minute quantities.

In a recent article, Sachs, Strauss, and Kaliski report their results obtained with intravenous injections of salvarsan in "Syphilis of the Nervous System." They found that the biological findings in the spinal fluid could be favorably influenced by their treatment. The Wassermann test in the blood and spinal fluid did not respond so kindly, in many instances remaining unchanged throughout the treatment. Pain in most of their cases of tabes was lessened, and in some the progress of the disease was arrested.

In the cases here reported, Case II had six intravenous injections of salvarsan without any appreciable improvement clinically. He became progressively worse, and his attacks of gastric crises came on during the time he was getting these injections. Case III in this group received four injections of salvarsan intravenously, and three intradural injections of salvarsanized serum by the Swift and Ellis method; nevertheless his clinical manifestations continued to progress even more rapidly than before he received these injections.

All of these patients had received antispecific treatment in some form, but up to the time that educational treatment was instituted little or no clinical improvement was evident.

II. MECHANICAL

We endeavor to correct or minimize, by means of plates, shoes, knee-caps and braces, any mechanical disabilities present. The shoes are constructed so as to have a broad, rigid surface; this is obtained by using a wooden shank and extending the sole as far out as the patient will permit. The heel is low and wedge-shaped, with the base of the wedge on the ground. The leather embracing the ankles is reinforced, so as to prevent the foot from turning out. The whole shoe is built as light as possible. The arch defects present are corrected by means of plates; these plates are made from casts of the foot, which are taken with the foot at rest and also with the foot bearing the body weight, so as to get the points of distribution of weight when the foot is in action. The type of plate used is a modification of the Whitman plate, the lip being curved below the level of the scaphoid. The outer flange is lower and does not extend so far forward; the support of the transverse arch extends outward beneath the four inner toes. No two pairs are exactly alike, each being built on its own model, taken from the casts of the foot at rest and in action. The braces should be constructed from the lightest material obtainable, weight being an important factor to these patients. So soon as the muscles have regained their tone, through exercise therapy, and are themselves capable of maintaining the bones in correct position, the shoes and braces can be dispensed with.

The knee-caps are the ordinary silk or cotton elastic ones used in any condition requiring support at the knee-joint. They prevent the sudden giving at the knees to which these patients are subjected,

FIG. 1.

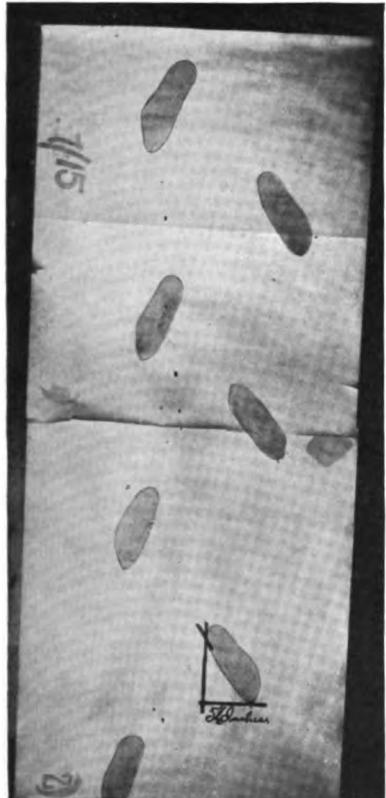


Fig. 1 shows footprints taken before treatment was begun on Case I. It shows the marked eversion of the left foot, and the broad base used by the patient in walking.

FIG. 2.



Fig. 2 shows the correction in eversion and narrower base after fifty treatments.

FIG. 3.



FIG. 4



Fig. 3 shows Case IV, standing without the aid of his stick; it well shows the broad base that he uses when standing or walking, the marked eversion of the left foot and the external roof of his left thigh. The extreme alertness in watching where his limbs are, and what to do next with them; this anxiety and constant watching of limb movements is usually evident in most ataxic tabetics. Fig. 4 shows the same patient after he had received fifty reeducational treatments.

and add confidence when he is walking. They limit the increased range of motion present, due to muscular hypotonus which accompanies this disease.

These mechanical measures are described fully by Doctors Victor E. Sorapure and Wm. J. M. A. Maloney in "Notes on Mechanical Support for the Feet in Locomotor Ataxia," published in the *Medical Record*, May 16, 1914.

III. EDUCATIONAL EXERCISES

These are divided into (a) breathing and relaxation exercises, (b) coördinated movements, (c) balancing.

(a) *Breathing and Relaxation*.—A quiet room, preferably darkened; a couch wide enough to keep the patient's arms from hanging over the side when they are relaxed; a small cushion for the patient's head, are all the things required. The patient, blindfolded, in a recumbent position, is then asked to inspire deeply, using the diaphragm (restricting thoracic movement), and at the height of inspiration to pause, then slowly and evenly to expire to the fullest extent and again pause. A small sandbag placed upon the abdomen will help fix the attention of the patient on exercise. After about twelve deep breaths have been taken the patient is asked to decrease the depth of the inspiration and to shorten the pauses and fix his attention on the sensation of the air current passing through his nasal cavities. After a few minutes of medium breathing the depth is still more decreased and the pause shortened until the patient is breathing quietly as in sleep.

Relaxation of the muscles is then begun. To relax the muscles, passive movements, in which the muscles are alternately lengthened and shortened, are employed: The muscles of the scalp, forehead, cheek, eyelids, and jaw are passively moved until wrinkling of the forehead and blinking of the eyelids disappear and muscular spasm is reduced or eliminated. Next a shoulder is relaxed, then an arm; each in turn must be passively moved until all traces of muscular tension vanishes and the part lies motionless and flaccid, and falls limply from any unsupported position. Then the thigh and leg on the same side should be taken. After a part is relaxed, those previously and that newly relaxed should be briefly dealt with again, in the order in which they were first relaxed. This linking of parts previously to

parts newly relaxed is helpful in bringing the whole to a satisfactory state of relaxation. The muscles of the trunk are manipulated with the patient sitting in a chair, and by movements from side to side the muscles can be relaxed.

By this preliminary procedure we eliminate all extraneous muscular movement and spasms; we produce a state of mental tranquillity and concentration, thereby obtaining a more perfect discrimination of sense impressions derived from joint or muscle movements.

We are now ready to go on with the movements. These consist of flexion, extension, abduction, adduction—in fact, any simple movement that can be performed at the joint on which we are working. We usually start working at the ankle first, then follow with the knee and hip on the same side in the order mentioned. These movements follow the plan outlined below.

(b) *Movements at the Joints.*—Passive movement is the first one done at the joint on which we are working. It should be done slowly and to the fullest range of motion possible, pausing at each extreme, and returning the part to the normal position when the motion is completed. The same movement is then performed against slight resistance offered by the patient, the resistance being gradually increased. The patient then performs the movement himself while the physician guides it along the proper plane; the guidance being gradually diminished, and as the patient becomes more proficient the movement is done unguided. Finally, the movement is done against the resistance of the physician; the resistance may be varied according to the degree of muscular hypotonus present. This order must be followed in all the movements taught. The different movements also may be practised in a sitting posture.

There should be pauses for relaxation and rest at frequent intervals between the movements. At no time should the patient be allowed to become fatigued. The sense of fatigue may be diminished—and the patient's statement should not be relied upon—but at the slightest faltering of muscular movements or increase in the pulse-rate the indication is breathing and relaxation. After the patient has mastered these movements at all joints he is ready to start balance.

(c) *Balance.*—The patient is then instructed in balancing on his hands and knees. His knees should be protected by thickly-padded knee-caps. Creeping should then be practised; in creeping exercises

FIG. 5.

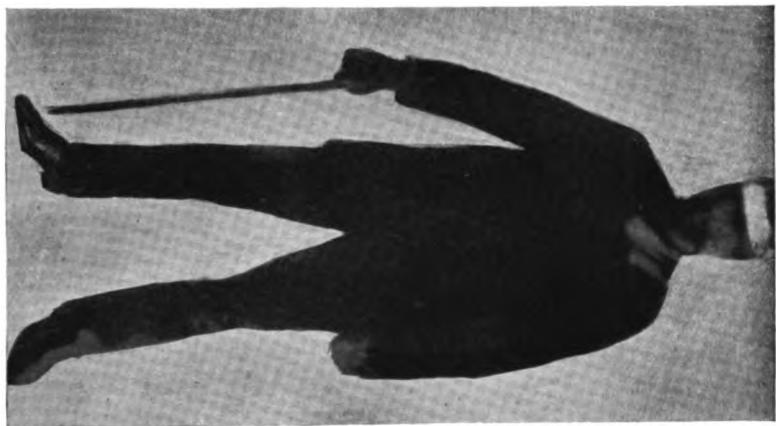


Fig. 5 shows Case V. in this series. The picture was taken in the office by artificial light, and was given a thirty-second exposure. It demonstrates very well the marked instability of this patient before treatment was instituted. Even with the aid of his stick it was impossible for him to remain steady for so short a time as thirty seconds.

FIG. 6.

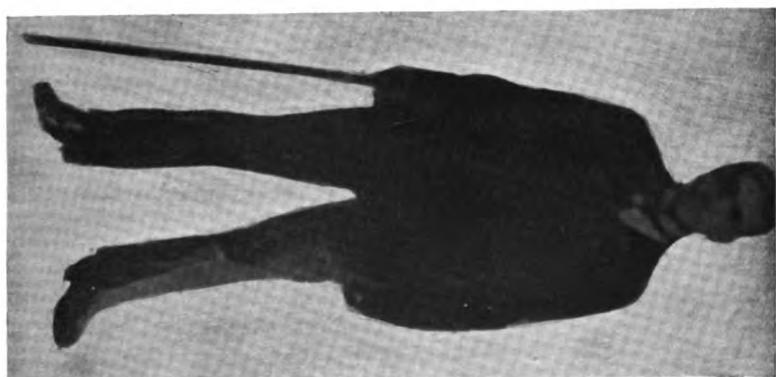


Fig. 6 was taken at the same time, but is only a fifteen-second exposure, with the support of his stick. It shows the broad base assumed by the patient when standing, the distortion of the body and neck, outward rotation of the left foot, and the tremendous effort required for him to stand that short period of time.

FIG. 7.



Fig. 7 was taken after the patient had received twenty reeducational treatments, extending over a period of about six weeks.

the back should be kept horizontal, and the head should be held up. When creeping has been mastered, the patient should then try kneeling in an upright position, then progression in the upright kneeling posture. This is followed by attempts to rise from a sitting position, and, finally, walking is taught. The changes from one position to the other should be made very gradually and only when the patient has mastered the exercise previously assigned him. At no time should his confidence or ability be unduly taxed.

From the very first lesson blindfolding must be insisted upon. During every movement the patient counts rhythmically so as to educate him to move easily, uniformly, and at a regular time. In creeping and walking exercises strips of linoleum or carpet of different widths are used to give direction; as the patient becomes more proficient, narrower strips are used.

These exercises are fully described by Dr. Wm. J. M. A. Maloney in his paper, "The Cure of Ataxia," *New York Medical Journal*, November 29, 1913.

REPORT OF CASES

CASE I.—J. F. H., forty-six years of age, single, born in this country. Composer by occupation. Family history is unimportant. Past history, moderate user of alcohol and tobacco. Denies ever having had venereal infection, but admits sexual excess. Present history began seven years ago, when patient noticed that his movements became uncertain when trying to get about in a dark room. He found that he had increasing difficulty in going up and down stairs, and soon was unable to do so without using some support. Had attacks of sharp, shooting pains in legs and occasional attacks of pain in his abdomen, accompanied by vomiting. He also had some bladder pains, difficulty in starting the stream and dribbling of urine when he had finished.

At this time, while on his way to visit his physician, he attempted to step up a street curb, but found he was unable to do so; he became alarmed and promptly collapsed. He was assisted home, where he stayed for six weeks, refusing to venture out in public again. In his home he moved about cautiously with the assistance of a stick, which he used continuously. His ataxia became very much more marked since his fright. His fear was so pronounced that he would not venture out unless accompanied by an attendant.

Physical Examination.—Poorly-nourished man. Heart and lungs negative. Pupils contracted, equal, irregular, react to accommodation, but fixed to light on both sides. Ptosis of left lid. Muscles moderately hypotonic. Increased range of motion at joints. Knee-jerks lost on both sides. Sensory losses and well-marked ataxia of lower extremities. Patient uses a broad base, has his eyes fixed on the ground, and can not stand without the aid of his stick. Romberg's sign well marked.

Treatment and Subsequent History.—This patient received about fifty lessons in all. Breathing and relaxation required considerable effort and persist-

ence to be mastered; this was due to the extreme mental perturbation under which this patient always labored. When this mental tension was eliminated, movements were more readily grasped. When balance on hands and knees was begun, he displayed utmost fear of collapsing, but with the slightest support would regain confidence. He soon learned to balance well. (Figs. 1 and 2.)

This same difficulty was encountered when hand and knee progression and all the subsequent stages of the treatment were started. When blindfolded, this patient would fear the slightest change in his position, but if supported, even ever so lightly, would perform his exercises without any difficulty. When walking was being taught to him he would not dare to attempt to move unless given some support; if he allowed the support of one finger this fear would promptly vanish.

After twenty-four lessons his ataxia had improved to such a degree that he was able to discard his stick and again walk freely in public, his fear having disappeared. When seen in August, 1914, his ataxia and other symptoms referring to locomotion had also disappeared.

He was practically in this condition when last seen, four months later, during which time he had neglected to practise his exercises. He is a decidedly neurasthenic type of patient and is greatly influenced by any emotional disturbance; still he has no evidence of what was at one time a severe ataxia.

CASE II.—G. W., forty-two years of age. Family history is unimportant. Past history: Has had ordinary diseases of childhood. Gonorrhœa twenty-five years ago. Had a chancre nineteen years ago, for which the patient received treatment extending over a period of two months. Does not remember any secondaries.

Present history began five years ago with sharp, shooting pains in his legs. Noticed that he became tired very readily. Gradually lost weight. Sight in right eye became poor. Found he had great difficulty in walking up and down stairs and in the dark. Was unable to bend over when he closed his eyes. Had feeling of numbness in his left leg, followed by the same feeling in his right leg one year later. Three and one-half years ago patient found that his uncertainty in walking had increased to such an extent that he had to adopt a stick to get around in public.

About eighteen months ago he received six injections of salvarsan intravenously, one injection a week, and weekly injections of salicylate of mercury intramuscularly. During this course of treatment he began to have severe gastric crises, which lasted intermittently for the next five months. His ataxia became very much worse. Sexual power and desire lost.

Physical Examination.—Well-nourished man. Heart and lungs negative. Pupils unequal; right very much larger than the left, irregular, react to accommodation, but fixed to light on both sides. Ptosis of left lid. Well-marked hypotonus of muscles. Joints show increased range of motion. Knee-jerks lost on both sides. Sensory losses and marked ataxia of lower extremities. Romberg's sign well defined.

Treatment and Subsequent History.—This patient received about thirty-five lessons to present date. Breathing was taught in one lesson. Relaxation required a number; as his work is executive and of a responsible nature, he is under high mental tension at all times. This no doubt was why it was so difficult for him to control his musculature.

Movements at the joints offered little difficulty. Resistance exercises were

persisted in to overcome the marked muscular hypotonus. Hand and knee balance was soon accomplished. Fear in this case was well defined, but rather of a delusional character. Although he unhesitatingly attempted to follow any correction in his gait suggested, he would always maintain that it was impossible for him to do so, as he feared his legs would not support him, even after having repeated the movement any number of times.

He has also well-marked hypochondriacal symptoms, attributing any slight disturbance as a manifestation of his disease. Six months ago he had an eruption of herpes zoster, which he insisted was due to his original infection, and until a Wassermann test was reported negative he would not give up this idea.

On account of the irregular attendance for treatment, and having to travel daily from the suburbs to his place of business, I have not so far been able to produce sufficient confidence to induce him to permanently discard his stick. Nevertheless his ataxia has almost entirely disappeared. He does not use his stick in the house, sometimes walking without it even in the dark. He is now able to stand with his eyes closed, and bends over easily without falling. He is able to balance on one foot. His muscular hypotonus is greatly improved. His mental attitude towards life is much brighter, and I have hopes that at some near future time he will be able to discard his stick permanently.

CASE III.—H. K., thirty-nine; married, native of Austria; waiter by occupation. Family history: Father died of cardiac diseases, mother of cerebral hemorrhage; seven brothers and sisters died in infancy, cause unknown. Past history: Measles during infancy. Pneumonia at twenty years of age, followed by an attack of jaundice. Seven attacks of gonorrhœa. Hard chancre nineteen years ago, for which the patient was treated for a period of eight months. Married for the past twelve years. Wife bore two children; both are alive and healthy at the present time. Wife never has had any miscarriages. Present history began about five years ago with slight pain and constant feeling of tiredness in legs. Two years ago he noticed numbness and girdle sensation in left leg. At this time, while on his way to work one morning, he was seized with a severe, cramp-like pain, which lasted about two minutes and made him feel as if his left knee was seized in a vise. He had to be assisted home and went to bed, where he stayed for two weeks. When he tried to get out he found that he had lost control of his left leg. Right leg remained steady for about one year, when it was also involved.

From the onset of his primary attack, two years ago, patient has had to use a stick to get around in public. He has difficulty in negotiating stairs and curbs. He is unable to move about in the dark with any degree of certainty. Sexual desire and power have become diminished in the past two years, and lightning pains are more severe and come on with greater frequency.

I might add that in June, 1913, he received three injections intradurally of salvarsanized serum by the Swift-Ellis method, and four intravenous injections of salvarsan. His ataxia and other symptoms became so much worse that he refused further treatment along those lines.

Physical Examination.—Well-nourished man. Heart and lungs negative. Pupils irregular, unequal, left is larger than the right, react to accommodation, but fixed to light on both sides. Ptosis of the left lid. Muscular hypotonus moderate. Increased range of motion at the joints. Sensory losses and moderate amount of ataxia on both sides. Knee-jerks lost on both sides. Romberg's sign present.

Treatment and Subsequent History.—This patient received about twenty-four lessons in all. Breathing and relaxation were readily learned, only one lesson being required. The fear complexes in this patient were not very prominent. He readily adapted himself to the treatment, and blindfolding had no terrors for him. He worked hard and faithfully, and in a very short time he mastered movements, balance and walking. After fourteen lessons he without reluctance discarded his stick, and has since been freely going about in public without it.

He was able to return to his work again after being idle for two years. He has been returned to a pre-ataxic state in a period of five weeks, during which time he received twenty-four lessons.

He is now able to progress, blindfolded, along a strip of linoleum about six inches wide for a distance of twenty feet. He can likewise move freely in any direction, backward, forward, and from side to side, and displays no uncertainty in his movements.

Needless to say, that, with the exception of his ataxia, he has all the cardinal signs of tabes.

CASE IV.—A. L., forty-five years of age; married; native of Germany; butcher by occupation. Family history negative. Past history: Moderate user of alcohol and tobacco. Denies venereal infection. Present history began nine years ago, when patient noticed unsteadiness in walking, particularly at night or in a darkened room. Difficulty in walking down stairs. One year later noticed numbness of extremities, most marked on the left side. Began to have severe lightning pains in his legs.

His ataxia became so pronounced that he had to use a stick to get around. Patient is unable to perform any of the finer movements, such as buttoning his shirt or collar, lace his shoes, etc., on account of slight ataxia of his upper extremities. Five years ago patient began to have severe gastric crises, from which he still suffers from time to time. For past two years his ataxia became stationary, except when he labored under some emotional stress, when it became noticeably worse. Patient for the past seven years has been impotent.

Physical Examination.—Well-nourished man. Heart and lungs negative. Pupils unequal, irregular, react to accommodation, but fixed to light on both sides. Ptosis of both lids. Moderate hypotonus of the muscles. Knee-jerks lost on both sides. Marked ataxia of lower and slight ataxia of upper extremities.

Sensory losses most marked on left side. He collapses when eyes are closed, and has his eyes steadily glued to the ground when standing.

Treatment and Subsequent History.—This patient received about fifty lessons in all, thirty of which were given in the first six weeks under my care. He was taught breathing and relaxation in one lesson. The movements at the different joints were also very readily grasped. In about four weeks he was able to coördinate perfectly and perform all movements at the different joints blindfolded. Not until this time was he able to attempt anything except in a recumbent position. He then started balance.

The first time he attempted to balance on his hands and knees, blindfolded, he promptly collapsed. On account of his fear of collapsing he refused to again attempt balancing completely blindfolded. I overcame this fear by permitting him to at first balance partially blindfolded and gradually increasing the amount of blindfolding, so that at the end of a week he was able to balance perfectly, completely blindfolded.

It was absolutely essential to overcome this primary fear in order to suc-

cessfully continue with the treatment. We then started progression on his hands and knees. Again this fear of collapsing interfered with the progress of the treatment, but it was readily overcome by the same tactics as previously mentioned; that is, partial at first, and then gradually increasing the amount until he was completely blindfolded.

Within one week he was able to progress freely on his hands and knees and knees alone, completely blindfolded. I then began balance and progression on his feet, and within two weeks he was able to balance and progress around the room with slight support. He received up to this time about thirty-eight lessons in about eight weeks of treatment, after which he was able to discard the use of his stick and walk about the street freely.

His first attempt resulted in a walk of twelve blocks, negotiating every curb without assistance. At present, after fifty lessons, the ataxia of his upper and lower extremities has completely disappeared; he is able to stand with his eyes closed, walk without watching his feet, and readily ventures about in the dark and in public without the aid of a stick. He is now able to dress himself without any difficulty. For the first time in eight years he was able to sew a button on his trousers, provided the needle was threaded for him. (Figs. 3 and 4.)

CASE V.—J. M., thirty-six; single; born in Austria; waiter. Family history: Mother died of apoplexy. Past history: Measles and scarlet fever during childhood. Uses alcohol moderately. Denies venereal infection. Present history: About one year ago patient began to suffer from lightning pains in his legs. Began to lose weight and go down hill. Left leg became numb and lost sense of position when he did not watch it. Became fearful when walking in the street. He then noticed that he was uncertain on his feet, especially in the dark and when going up and down stairs. Would sway while standing if he closed his eyes. He then had to adopt a stick to get around, but even with this aid he frequently fell. The uncertainty in walking increased, and within four months right leg was also involved and he had to stop his work. For the past ten months he has had difficulty in starting his urinary stream, and it would continue to dribble after he had finished voiding. Sexual desire and power diminished.

Physical Examination.—Well-nourished man. Heart and lungs negative. Pupils unequal, irregular, react to accommodation, but fixed to light on both sides. Ptosis of both eyelids. Increased range of motion at the joints, muscular hypotonus moderate. Sensory losses on both sides. Marked ataxia of lower extremities. Romberg's sign well defined. Patient stands on a broad base and keeps his eyes glued to the ground.

Treatment and Subsequent History.—This patient received thirty-four treatments in all. By bringing him in contact with some of the other patients, who had already received treatment and were improving, he soon became hopeful and enthusiastic. His fear was readily overcome. He mastered without much difficulty breathing, relaxation, and muscular movements. When the plates and shoes were tried for the first time he protested vigorously and would not attempt any walking exercises. His fear of falling on their account was most marked, and only after threatening to discontinue his treatment could I overcome this fear. This fear originated in a peculiar manner; when he first saw the shoes he thought, on account of their width, every one would notice them, and that would be very embarrassing to him. After twenty-two treatments his ataxia had entirely disappeared and he was able to discard his stick and return to his work. (Figs. 5, 6, and 7.)

SUMMARY AND CONCLUSION

Other patients who have had the treatment and report for observation show continued improvement. So far there have been no relapses in any of the cases. These patients all show decided physical improvement; all have gained weight during the course of the treatment. They claim their pains and attacks of gastric crises have been decreased in number and severity, and they feel better than ever before.

Another patient, who has not been under observation for the last nine months, reported recently that for the last four and one-half months he has been compelled, on account of increased business, to work twelve hours a day, going freely about the city in the course of his work. He came to get my consent to allow him to take an extensive trip on the road, feeling himself able to negotiate this journey. This patient before the treatment was extremely ataxic and quite unable to do other than executive work in the office.

In reviewing the evidence of the treatment here reported and many others studied one is impressed with the tremendous importance of the psychic elements that enter into the composition and maintenance of ataxia of tabes. Fear must be given special consideration and attention. The longer the fear has been maintained, the more numerous are the complexes elaborated and the more difficult will they be to overcome. They must be considered in the pursuance of any treatment if a successful result is to be obtained.

CONCLUSIONS

(a) With the observations made by men reporting the benign influence of diminished or lost sight on ataxia of tabes, the results obtained in these and other cases treated along similar lines show the rationality of reeducating ataxic tabetics blindfolded.

(b) By this method of treatment we rapidly increase the actual coöordinating power of our patients.

(c) We decrease the psychic components of ataxia, such as fear, and combat fatigue.

(d) Lastly, we instil hope and confidence into a class of patients who heretofore were given little or no encouragement.

THE CAUSE AND CURE OF CHRONIC PURULENT OTITIS MEDIA

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A CHRONIC purulent otitis media can be treated and cured. However, any given routine treatment will frequently fail, as would a single method of treatment for abdominal pain. The presence of a purulent discharge from the middle ear gives no more evidence of the actual pathologic condition which exists than does a single abdominal symptom. The physician must know the exact location and extent of the pathologic process. He should ascertain the state of the patient's general health, the condition of the nose, throat, eustachian tube, mastoid cells, and the tympanic and mastoid walls. Also the extent of the pathologic process within the middle ear should be ascertained, and the involvement of other parts confirmed or eliminated.

Chronic purulent otitis media is a retarded acute process, in which the purulent discharge is maintained by some undesirable condition. This condition, the cause of the prolonged discharge, must be eliminated to effect a cure.

First, then, let us find, if possible, the cause of the continued purulent discharge. This cause may be one of four things: constitutional disease, a recurrent reinfection through the eustachian tube, a constant flooding of the tympanum with a purulent overflow from a mastoiditis, or other complication of the otitis media.

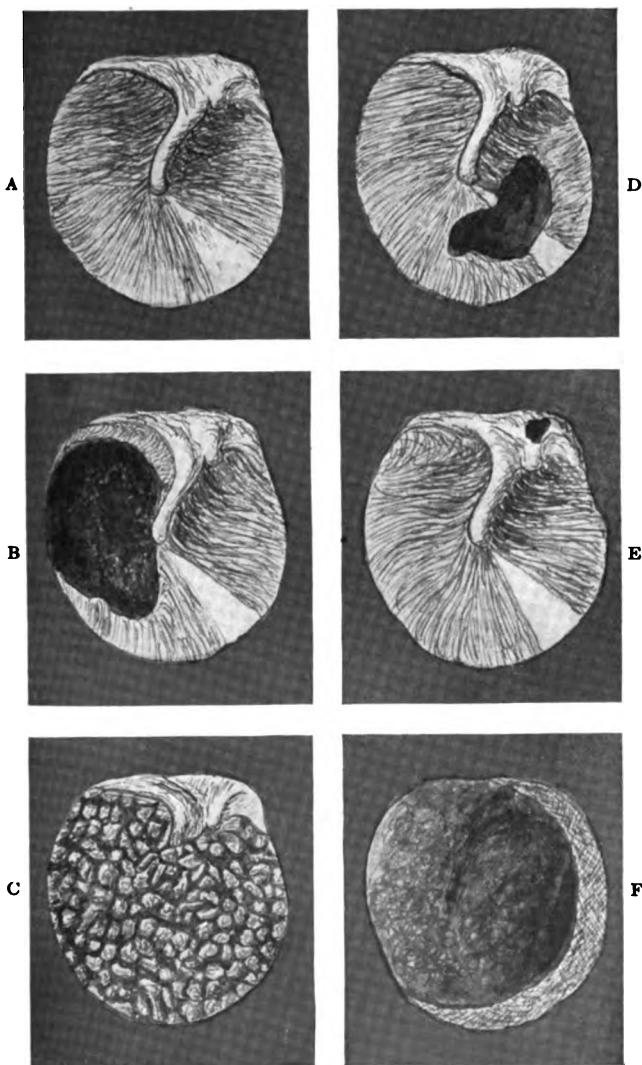
Of the constitutional diseases, syphilis and tuberculosis are the more common. The former should receive antiluetic treatment. In the latter, other foci of the disease should be sought and treated, while the patient's general condition should be fortified by ample diet and such hygienic measures as are known to be beneficial to these cases. The aural lesion should be kept under observation in these cases, and should receive treatment not unlike that of other infections, except that

we are guided by the constitutional symptoms and treatment. In syphilitic otitis media an antiluetic application may be used locally. A chronic purulent tympanitis resulting from the acute infectious diseases of childhood should receive the same attention as other forms of this disease.

The eustachian tube becomes a veritable sluice for contamination of the tympanum whenever the membrana tympani is perforated. Hence we should remove such foci of infection as adenoids, polypi, abscesses, or tumors from the pharyngeal entrance to these tubes. Likewise any foci of infection within the nose should receive treatment. An inflamed tube may be treated by the local application of argyrol, either through an eustachian catheter or, at the tympanic extremity, through the perforation in the membrane tympani. This is to restore the eustachian tube to its normal condition. When a lesion of the outer extremity of the tube exists, or if there is a permanent perforation of the drum membrane and the tympanum is frequently reinfected through the eustachian tube, all other sources of reinfection having been eliminated, a curettage of the eustachian tube is indicated. The object in doing this is to remove the mucous membrane from the upper portion of the tube and allow the tube to become closed by granulation tissue. This prevents reinfection through the tube from the pharynx. Ample drainage and ventilation are afforded through the perforation in the drum membrane. (Figs. 1-4.)

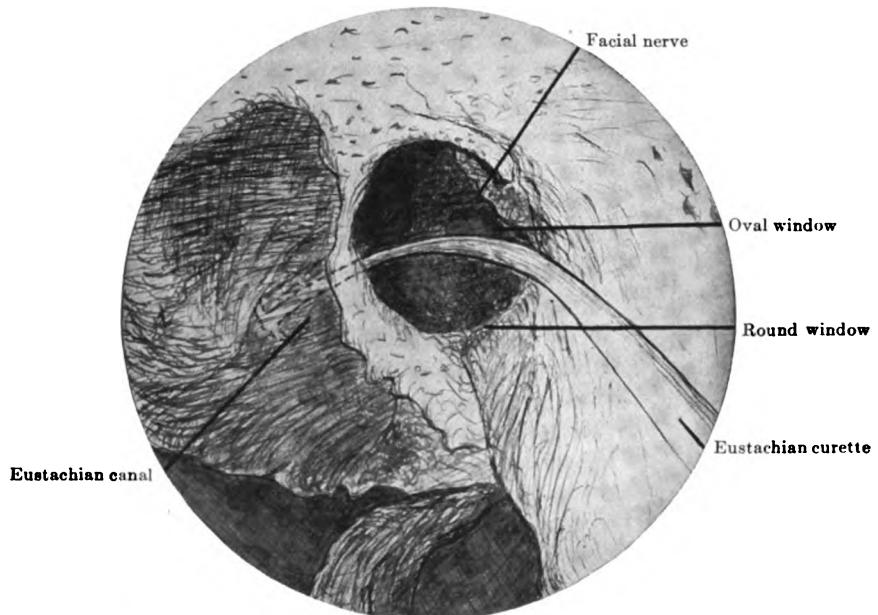
The writer believes mastoid involvement in chronic purulent otitis media is far too frequently overlooked. When one sees acute forms of this disease without pain or fever he does not wonder that an active chronic inflammation of the mastoid cells is accompanied by little or no subjective disturbance. The effect of intratympanic treatment, or the virulence of the infection, as ascertained by a microscopical examination of a smear or culture, may lead us to suspect a more extensive involvement than the middle ear. A chronic mastoiditis may become manifest as a persistent profuse discharge from the middle ear, which immediately reappears when dried by the cotton wound applicator. The patient may complain of recurrent mastoid pain and tenderness, or headache on the side of the tympanitis. A perforation of Shrapnell's membrane should make one suspicious not only of attic disease but also of chronic inflammation of the mastoid cells. (Fig. 1, E.)

FIG. 1.



A. Normal drum membrane. B. Marginal perforation. C. Extensive destruction of membrane with granulation tissue formation. D. Central perforation. E. Perforation of Shrapnell's membrane. F. Entire right drum membrane destroyed showing entrance to eustachian tube, internal wall of canal.

FIG. 2.



Showing the passage of a curette into the eustachian canal, avoiding important structures.

FIG. 3.



A temporal bone upon which a simple mastoid operation has been performed, showing straight probe passing through the antrum and the eustachian canal.

FIG. 4.



Showing erosion of the sigmoid sulcus, and granulations on the sigmoid sinus, as exposed during a simple mastoid operation. Duration of the disease, eleven weeks. Cessation of the discharge and wound healed in forty-seven days after the simple mastoid operation.

Every physician who has witnessed many mastoid operations is familiar with a variety of pathologic processes which could not be considered acute. Chronic purulent mastoiditis frequently exists, though the symptoms may be obscure. This much-neglected disease is undoubtedly the cause of many cases of facial paralysis, subdural or perisinus abscess, sinusitis, thrombosis, septicæmia, meningitis, brain abscess, and labyrinthine disease. The obscure symptoms of chronic mastoiditis should be discovered, and our treatment directed to the cause of this chain of more serious diseases, of which the symptoms are more urgent. Chronic purulent mastoiditis may never lead to more serious complications, but the proportion of cases which do is sufficiently large and the results sufficiently grave to make an operation advisable in every case. If done sufficiently early, probably every case could be cured by the simple mastoid operation.

Other complications of chronic purulent otitis media would undoubtedly be far less common were the purulent overflow from the mastoid cells posteriorly, and reinfection through the eustachian tube anteriorly, eliminated. Uncomplicated purulent otitis media responds very kindly to treatment. In these cases routine irrigation is not necessary, as the discharge is limited on account of the small area involved. Numerous methods of treatment are used for this condition, but the writer prefers to make an intratympanic application of concentrated argyrol. This is made by adding enough water to pulverized argyrol to make a paste. (Fig. 5.) The writer has frequently observed a cessation of the discharge after a single application of this argyrol paste. This, of course, does not insure against a reinfection through the eustachian tube, but it may secure a sufficiently long cessation of the discharge to eliminate other complications; and with a renewal of the discharge, following an acute rhinitis or pharyngitis, the source of the reinfection is quite evident.

FIG. 5.



Showing safe
method of
winding applicator for
intratympanic
applications.

The complications of chronic purulent otitis media are quite varied, and the treatment likewise varies according to the complication. Polypi should be removed, unless they spring from the inner tympanic wall, when the free exposures obtained by a radical operation are indicated. Then the suppuration, which is usually the cause of the formation of the polypi, should be treated. Granulations are usually evidence of a serious destructive process, and yet a small area may be controlled by a tight pack, after the application of boric acid powder. Large masses of granulations, often pedunculated, should be removed with a small curette, avoiding the inner wall, and with great care as to the floor, in case there be a dehiscence of the bony covering of the jugular bulb or the carotid artery. Then the tympanic cavity can be readily inspected and treated.

A fistula leading from the mastoid cells, persistently recurring polypi, facial paresis, or paralysis in the course of a purulent middle-ear disease, are all evidence of bone necrosis, and a radical operation is indicated. Other indications for this operation are persistently recurring exacerbations of acute inflammation, cholesteatoma, or polypi springing from the region of the oval window. Threatened complications may hasten our decision to operate, but every case should be cured before these more serious complications arise. More extensive operative procedures may then be indicated. Failure to effect a cessation of the suppurative process is an indication that the cause is not eliminated. This cause must be discovered, and the aural discharge suppressed, to remove the tendency of this disease toward grave complications.

THERAPEUTIC TECHNIC

BY WILLIAM BRADY, M.D.

Elmira, New York

OUR surgical colleagues take considerable pride and pains in what they call technic. That is one thing which makes their services worth a good price. If a surgeon should use an agent offered him by a manufacturer as a very efficient antiseptic or germicide for the preparation of the field of operation, but without full data as to formula and laboratory and clinical tests, why, the surgeon would be considered a rank tyro. His technic would inspire ridicule and his work would command little confidence. A good surgeon insists upon knowing precisely what he is using in his work, and so the public respects him.

If medical practitioners were as careful and exacting in their technic as the surgeons are, we fancy general practice would be a more attractive field than it is at present. Medicine would retain the confidence of the people if doctors themselves could acquire a precise therapeutic technic, and there is no reason why such technic may not be acquired, unless it be indifference, for the scientific basis of pure medicine is fully as well established as is the scientific basis of surgery.

It makes one think to hear the small-calibre surgeon—the man who holds himself out as surgeon and treats all manner of cases as they come his way—proclaiming the futility of medical treatment for such conditions as acute appendicitis, or exophthalmic goitre, or hypertrophic rhinitis, or adenoids, and insisting that surgery is the only safe remedy. It makes us do some thinking and planning, because experience has proved that there is a non-surgical treatment which gives favorable results in these conditions—not in all cases, of course, but in many of them.

It makes us particularly think to hear a surgeon telling of his successful results, because what he calls a success and what the patient calls a successful result are frequently very different things. It has been our misfortune to be placed in a unique position wherein we have heard the late after-histories of scores of persons who had

been "successfully" operated upon months or years previously, and the revelation has been nothing less than disheartening, for it has shattered our faith in surgical statistics. Thus, up until recently a large majority of the little surgeons—the operators who "specialize" in general surgery, but condescend to treat all comers regardless—have ridiculed the notion that medical treatment for appendicitis could be safely practised, since one could never be sure the patient would not have a second attack later on, even though the first attack were medically managed. We have even heard surgeons say, when removing what had all the earmarks of a normal appendix, "Well, anyway, we are now certain the patient will never have appendicitis again—or yet!" Comforting thought in case of a faulty diagnosis, to be sure! But what name is to be given to the colicky pains, nausea, vomiting, temperature, rectus rigidity, and so forth which the patient suffers a year or two later? And if that happens in a fairly normal case, what is the after-history in the hundreds of genuine cases of appendicitis which make "uneventful" recoveries under surgical treatment? The surgeon never knows—not the first surgeon, at any rate. The family doctor, the sanitorium physician, and *other* surgeons have to cope with these after-histories of *successful* surgery, and it is indeed a problem to explain why these neurotics persist in having symptoms!

We believe in surgery, early and thorough, when such treatment is indicated, but we wish to voice a lack of confidence born of a new intimacy with the after-history. All of us see, often enough, deplorable instances of injudicious surgery, particularly pelvic surgery, but to few of us it is given to hear the details of the subsequent experiences of many surgical cases.

Disappointments aside, modern surgery deserves all the credit it receives, and to careful, scientific technic it owes everything. Now modern medicine, by comparison, deserves all the condemnation it receives, although we may at times feel that we are unjustly criticised by the public. A cursory view of conditions in your own community will show you that the men who bring the profession of medicine into disrepute are the men who possess and apply the worst technic in a therapeutic way; they are the men who treat all diseases symptomatically, with blunderbuss tablets and mixtures of which they know practically nothing except the names of symptoms or conditions men-

tioned on the labels! These are the members who belittle and cheapen the art of healing and create the demand for non-medical schisms. One cannot practise medicine successfully on the blunderbuss principle many years, not with honor. The people, even the uneducated class, soon grow wise and realize that such a doctor is worth no more than his petty price.

Getting gradually down to cases, will some kind reader inform us what earthly excuse there may be for the perpetration of the following formula, other than the wild, blind groping of some misguided empiric:

Coryza Tablet.—Atropine, $\frac{1}{10}$; strychnine, $\frac{1}{10}$; arsenic trioxide, $\frac{1}{10}$; morphine, $\frac{1}{10}$; quinine, $\frac{1}{10}$, and camphor, $\frac{1}{2}$ grain.

Or this bad joke upon a confiding patient:

Cystitis Tablet.—Boric acid, 2; potassium bicarbonate, 2; ex. buchu, 1; ex. dog grass, 1; ex. corn silk, $\frac{1}{2}$; ex. hydrangea, $\frac{1}{2}$; atropine, $\frac{1}{10}$ grain.

Or this treacherous combination against a serious condition:

Heart Tablet.—Tr. digitalis, 3; tr. belladonna, $\frac{1}{2}$ (1900); tr. strophanthus, 1; nitroglycerin, $\frac{1}{10}$ grain.

The coryza tablet could never be employed by a physician who really thinks he knows what is the matter and what he wishes to accomplish by medication, since no human brain could possibly determine what effect such a monstrosity would have when administered.

The cystitis tablet, which the successful manufacturer finds a good seller, for some reason or other, is scarcely susceptible of discussion. He who would actually prescribe such a mixture if the tablet were not ready to save the trouble of thinking what to do for the patient, certainly would have a vague conception of the duty of a physician. It is probably intended for those who diagnose "cystitis" on the complaint of the patient that it burns to urinate!

And our old enemy, the heart tablet! Will some regular purchaser of this freak combination come forward with an explanation of indications and action? Will the defender of the blunderbuss state how frequently such a mixture should be administered in any case? Will he enlighten us upon the duration of action of the various ingredients? Surely he will teach us how the mere mixing of a one-hour emergency drug like nitroglycerin with a twenty-four-hour drug like digitalis is justified in the interest of practicability. And perhaps he will give us

some intelligent conception of the possible influence upon a deranged circulation of such an all-around disturber of the central and peripheral nervous system. We believe nitroglycerin a good drug for quick, fleeting effect; and digitalis is an equally good one to do certain things for the patient to-morrow or next day; but what mitigation there may be for harnessing together a jack rabbit and a fat old ox is indeed hard to understand.

And then there are our standard cough mixtures, proprietary and pharmacopœial or National Formulary. It does seem a crying shame that any man who holds himself out as being able to diagnose, treat, operate, or prescribe for human ailments or conditions would find it necessary to stock or prescribe these ready-to-swallow catch-alls. Surely cough is no harmful symptom in itself, not in the majority of cases; it doesn't prove whether the condition is trifling or serious, of short duration or chronic, of respiratory or circulatory origin; then why try to meet it with a cough remedy? Why indeed? Simply because the unlearned medical fathers set the fashion generations ago, and the astute manufacturers still find the habit profitable. By no means is it to be ascribed to the individual practitioner's own knowledge of what is needed; if he has such knowledge or even pretends to have it he will formulate the patient's medicine extemporaneously, and the more certain he feels about his diagnosis the fewer ingredients will enter into the mixture.

After all, can you bring to mind one single instance of a shotgun or blunderbuss mixture which has ever attained anything like a respectable reputation in therapeutics? We mean any mixture which has enjoyed and deserved a reputation for efficacy in the treatment of any disease? All of our specifics, all of our most effective remedies are simple preparations, not conglomerations of this and that.

Furthermore, have you ever accomplished anything really worth while by "trying" these motley creations of the pharmaceutical manufacturers? And in your own heart do you believe you are justified in "trying" all of the scores and scores of "highly-recommended" blunderbuss combinations exploited and thrust upon you by the detail man and the urbane drug agent? Is that what your patients pay you for?

The numberless anti-constipation pills and tablets seem to vie with the anti-cold formulæ for the distinction of absurdity. Take

this old favorite which thousands of doctors have inflicted, without a single thought for themselves, upon millions of patients, without ever curing the constipation :

Anti-constipation, A. B. S.—Aloin, $\frac{1}{2}$; ex. belladonna, $\frac{1}{2}$; strychnine, $\frac{1}{16}$ grain.

Aloes is a crude, pile-driving physic at best. Belladonna dries secretion, but, notwithstanding that, it has a place in the pill for the fanciful purpose of preventing griping, since belladonna is anti-spasmodic; the strychnine is perhaps added to guard against heart-failure or loss of appetite while the pile-driver is doing business. But let us imagine the patient has solemnly swallowed one or two pills and retired. We will say it requires an hour to dissolve off the coating and break down the pill mass. Then the aloin begins to get in its work, completing the job, if at all, some six to ten hours later. But the belladonna isn't so slow. It interferes with intestinal secretion for an hour or two after the mass is broken down—maybe it would even stop a gripe if there were any griping taking place just then; but before the movement in the morning, hours before that, the belladonna has finished, has been eliminated, probably. Why is it in the pill? Why is strychnine in the pill? Why is the pill? Dozens of tests have conclusively proved that there is no appreciable difference in favor of this combination over plain aloes in the same patient. A. B. S. pills gripe as frequently as aloes alone. The pill is dangerous to dispense in private practice, for the reason that children are liable to be poisoned by the strychnine in the nice candy. There is no excuse for strychnine in such a combination. It is there simply because we are weak slaves of habit and do not use our own judgment enough. Indeed, we venture to say that strychnine is a drug which it is unjustifiable to dispense under any condition whatever; that it is strictly an emergency agent, and it has no place in the patients' hands. If doctors were not so obsessed with the idea that strychnine is a sort of vitalizer or all-round tonic—which it surely is not—there would be none of those dreadful tragedies which so frequently overtake irresponsible children. As a bitter tonic quinine is a safe substitute for strychnine.

It is sad to think that such unspeakable combinations as "anti-dyspeptic" and "anti-rheumatic" and, worst of all, "emmenagogue" tablets should be offered to educated physicians in this age of enlightenment.

ment. Yet they are offered, and extolled, by the drug manufacturers and the agents, so there must be a demand.

One curious thing we have noticed is that the physicians who freely, recklessly dispense strychnine in all sorts of forms will hesitate or fear to administer thyroid extract to a case of partial myxedema, on the ground that thyroid is a "dangerous drug"! It is dangerous if unintelligently exhibited, not when scientifically employed. But the strychnine dispenser is generally not of the scientific type; he sits at the feet of the drug-drummer, instead of gleaning his therapeutic knowledge from authoritative sources.

Results, we are often told, are what count. No matter what the stuff is, so long as it produces results and satisfies the patient.

A medical friend who dispenses exclusively had a gallon of cough medicine in his office. It contained a long list of simple ingredients—none of which amounted to a tinker's small mound of sand, except the two important ingredients, heroin and codeine, of each of which there was a fairly effective dose. We took our friend to task.

"See here, you conscienceless highwayman," we asked, "what in thunder are the *two* opium derivatives in this ungodly nostrum for? Hasn't one kind of dope enough kick alone?"

He didn't know anything about it. All he knew was the patients liked it and came back for more. We could inquire of the manufacturer why the codeine and heroin were both included. For his part, he wasn't interested in high-brow scientific therapeutic niceties; he was interested in *results*.

And evidently he was getting them, if the number of return calls can be considered competent evidence.

The argument of "results," so often set up by the nostrum manufacturer in opposition to scientific objections to the nostrum, and by the blunderbuss prescriber or dispenser in defence of his disgraceful habit, savors of downright quackery; it suggests the testimonials printed by the patent medicine people. When a practitioner has nothing but that frail defence to fall back upon he is on the toboggan and there is no hope of reforming him in this world.

Another plea of justification we frequently hear from the proprietary medicine prescriber is that he doesn't know how to write prescriptions, so he has acquired the habit of writing for these ready-made preparations as a matter of safety and convenience. It is

true, few know how to write prescriptions, excepting the Latin professors back in school, who rarely have the opportunity to put their art in practice anywhere else than on the lecture-room blackboard! We don't write prescriptions any more. It isn't done. All we do nowadays is write down the name or abbreviation of some simple drug, like infus. digitalis, and just add the amount, the dose, and sign. Or we may specify, to be on the safe side, thus: Liq. antisep. alk. (N. F.) or hexamethylenamine (U. S. P.). It is really much easier to write for the standard U. S. P. and N. F. products than it is to write for the proprietaries, and, besides, the element of confidence on the patient's part is manifestly upheld by the medicine prepared to order for his special case. A patient can scarcely be blamed for begrudging the fee when his doctor simply tells him to go and buy a bottle of some ready-to-take medicine which he might have purchased direct, without wasting time and money on the doctor.

Every physician ought to take a critical inventory of his therapeutic stock in trade at least once a year, and find out just how much junk and trash has accumulated on his shelves or in his mind. By going over the list with a determination to simplify and cast out wherever possible one will generally find much food for thought. Thought leads to study, and study means perfection of technic. The satisfaction and pleasure derived from medical practice are in large measure determined by the quality of one's therapeutic technic.

Personally we strive to limit our stock to single drugs. While two or three combinations still remain to harass and shame us, our armamentarium is practically limited to single drugs—wholly limited to single drugs in so far as potent principles are concerned. This has involved a lot of effort, for in our youth we did apply fearful and wonderful polypharmacy at the behest of our mentors, the drug salesmen. But by a continual struggle and close application to the scientific side of therapeutics it has been possible, at last, to attain a clean house, and the mental comfort and renewed confidence that attainment has brought us amply repay the strenuous effort it has cost—for when the drug drummers get you you are bound to have a hard fight shaking them off.

We figure that we save enough time, to say nothing of money and self-respect, by refusing to be interviewed by the drug agents, to give us a liberal education—if we apply the time to Dr. Eliot's "Five

Feet of Books," which we have no intention of doing. One thing we are sure of, however, and that is, our therapeutic technic is incomparably better than it was in the benighted years when we "fell" for the "talking points" of the gay drug drummer.

We are free to admit that once in a while, once in a great many whiles, the detail man or the drug agent does actually impart some information of practical value to the doctor, and if the fellow would stop there he would be quite the doctor's friend. But he doesn't stop there. He slips across a lot of other stuff which is bound to do the doctor harm, clutter up his technic, send him groping blindly in the wilderness of empiricism, when he should be hewing straight ahead on the narrow path of scientific study.

Simplify your technic, purify the atmosphere of your community, become an uplifter, stand by the good things in your profession and keep aloof from the evils that strive to lead you astray. Put some of the surgeon's effort into the business of preserving your technic and you will be a happier and better man. In short, consider the precept of the Father of Medicine: "Do good if you can, but do no harm." Maybe Hippocrates never said that at all—we only have it by hearsay—but, anyway, he is credited with the saying, and from what little we know of him and his ideas we firmly believe that he would have no use for the hit-and-miss style of therapeutic technic if he were living to-day.

NOTES ON SOME UNUSUAL CAUSES OF ABDOMINAL PAIN

BY ARTHUR NEWLIN, M.D.

Physician to the Pennsylvania Hospital, Philadelphia

One of the most frequent as well as one of the most interesting of medical situations in which the aid of the surgeon is called for by the internist is that of abdominal pain. In many instances this consultation is held not with the idea of an immediate necessity for operation but because of the difficulty in arriving at a definite conclusion as to whether the morbid process is one that should be considered surgical or should be treated on medical lines. Such a situation is exemplified by certain tabetics whose symptoms at times so closely simulate gastric ulcer or appendicitis. There have been numerous patients of this class who have submitted to operation either for the removal of a supposedly diseased appendix or for the performance of a gastro-enterostomy. The following notes are from eight non-surgical cases, in almost all of which, however, the advice of the surgeon was solicited at some time during the course of the disease.

As previously mentioned, the simulation of acute surgical conditions by crises of locomotor ataxia is a frequent event; it has been discussed to the extent that it now fails to arouse much interest; but there is a class of individuals who present somewhat similar symptoms, but who are less often observed from the standpoint: these are the cases of early cerebrospinal lues. The following two cases are illustrative:

CASE 1.—A machinist of thirty-four years was referred to the surgical ward of the hospital for operation for supposed gall-stones. Except for his present trouble, he had always been well and denied all venereal infection. For some months past he had been suffering from attacks of pain in the region of the gall-bladder, at times radiating to the back. These attacks were frequently accompanied by vomiting, were independent of the taking of food, and there was a dubious history of jaundice. There was slight rigidity of the upper rectus muscle; beyond this and slightly-increased patellar reflexes, the examination of the man was negative. Ophthalmological report negative as to pupils and fundi. Wassermann strongly positive. Patient sent to the medical ward, where, in spite of energetic antiluetic treatment, he developed the symptoms of cerebro-

spinal syphilis. The attacks of pain and vomiting continued for some time, all symptoms, however finally yielding entirely to repeated doses of salvarsan.

CASE 2.—Somewhat similar. A man of forty who gave a positive luetic history, but who was referred to the hospital as gastric ulcer or appendicitis, complained of severe abdominal pain, mostly in the epigastrium, recurring attacks accompanied by rectus rigidity and vomiting, loss of weight, weakness, and slight tenderness in right iliac fossa. Reflexes normal; fundi and pupils normal; no occult blood in stools; no leucocytosis. Strongly positive Wassermann. Anti-syphilitic treatment, disappearance of symptoms.

CASE 3.—This was also a disease of the central nervous system, but of a different character, with history and symptoms that at the first examination suggested a lesion in the upper abdomen. This man of twenty-six years of age was admitted to the medical ward of the hospital with pain, vomiting, and chilly sensations. Pain limited to the epigastrium. General physical examination negative, except for rectus rigidity and that one pupil was larger than the other. Gait, station, and reflexes normal; Wassermann negative. Ophthalmoscopic examination showed optic neuritis, engorged and tortuous vessels, and hemorrhages. Diagnosis, brain tumor.

The symptomatic versatility of syphilis is illustrated in the following case where that infection was not suggested in any way by the patient's history or symptoms:

CASE 4.—A man of fifty years was admitted to the medical ward of the hospital, supposed to be suffering from diaphragmatic pleurisy. His pain at onset was along the left costal margin; his physical examination at that time revealed nothing that accounted for his discomfort. In the course of the next twenty-four hours the pain shifted its locality to the epigastrium, became much more severe, and was accompanied by obstinate constipation and tympanites. These symptoms persisted and consultation was held with a surgeon. At this time the man's condition suggested partial intestinal obstruction due to a new-growth. A gastro-intestinal X-ray examination revealed, not an intestinal growth, but a large aneurism of the abdominal aorta. A Wassermann was strongly positive. This aneurismal enlargement of the aorta could not be felt through the rigid and distended abdomen.

CASE 5.—This was also of aneurismal origin. A colored woman of forty-three years was admitted to the medical ward with a provisional diagnosis of pneumonia. She had suddenly become ill on the previous day with excruciating pain in the upper right quadrant of the abdomen, radiating to the back and upward to the right shoulder. Her temperature at this time was subnormal, respirations and pulse rapid. The abdomen was rigid and tender, especially below the right costal margin. She was not jaundiced and her leucocyte count was very slightly elevated. At the base of her right chest posteriorly was a small triangular area of dulness like that of a Grocco sign; here the breath sounds were distant and fremitus feeble. With remission of an hour or so her pain continued, at times being so severe that it was beyond the control of morphine hypodermically. During remissions her abdomen relaxed, but examination revealed nothing abnormal. Death and autopsy showed a dissecting aneurism of the thoracic aorta that had ruptured into the right pleural sac. This patient had given a

history of no previous pain or discomfort in this region and had been constantly at her work, that of a laundress, up to the day before she was sent to the hospital.

CASE 6.—This is an example of abdominal pain quite different in origin from any of the preceding. A woman of fifty years applied for treatment for severe pain originating in the region of the left kidney and lower left side of her back; this radiated to the front and down the left side of her abdomen, following fairly well the course of the left ureter. History of renal calculus some eight years before. Physical examination negative; no urinary symptoms; no blood in urine. Ordered rest in bed, light diet, and diuretics. On the second day pain became more severe, the location as before, except that it was somewhat more abdominal than lumbar. On the third day, however, although the physical discomfort was unabated, the mental anxiety was relieved by the appearance of the first of a plentiful crop of herpes zoster.

Instances of pneumonia simulating appendicitis are so frequently a course of confusion to the medical man who has called upon the surgeon for advice that the following may be of interest:

CASE 7.—A woman of twenty-six years was referred to the hospital by her surgeon for operation for acute appendicitis. Acute onset, fever, chill and abdominal pain, tenderness with rigidity on the right side. Slight leucocytosis. Held up in the receiving ward on account of a few rales at the right base posteriorly. At the time there was no complaint of sore throat, and on examination the throat was somewhat red and tonsils slightly swollen. The next day, however, the abdominal pain had ceased, the rales in her chest had disappeared, but there was complaint of severe sore throat and the tonsils showed beginning follicular exudate. This is one of a number of cases noted in which acute tonsillitis began with vomiting and abdominal pain.

CASE 8.—Abdominal pain in this instance was a phase in a most interesting course of events to be reported in detail elsewhere. The patient, a man of twenty-eight years, a horse dealer, was admitted to the medical ward with provisional diagnosis of typhoid fever. He had been sick for seven days and gave a fairly typical typhoid history. For the past few days he had had severe abdominal pain; this was fairly generalized throughout the abdomen, which was greatly distended and tympanitic, with rigid muscles. General physical examination otherwise negative. The man's temperature was 103°; he had a leucocytosis of 16,000. The abdominal pain was so excruciating at times that the patient screamed in agony. This condition continued, and subsided only with the lapse of the patient into coma, several days later. Shortly after admission the possibility of a ruptured typhoid ulcer was considered, consultation with a surgeon was held, but it was decided that no indication for surgery was present. Death occurred five days later from acute glanders, nothing being found at autopsy to account for the intensity of the abdominal pain.

The cases described above are considered worthy of a brief report, as they are, in the opinion of the writer, rather unusual examples of what are sometimes called borderland cases. They are taken from notes made in the medical wards of the Pennsylvania Hospital.

SPECIFIC GRANULAR EPIPEPHYCITIS: THE SO-CALLED TRACHOMA

BY JOHN R. WRIGHT, M.D.

Louisville, Kentucky

THE designation "specific granular epipephycitis" is utilized herein to denote the infectious inflammatory disorder primarily involving the palpebral and later the bulbar conjunctiva, hitherto familiarly known as granular lids, trachoma, granular conjunctivitis, Egyptian ophthalmia (properly ophthalmitis), and other more or less ambiguous and inexpressive terms.

While no race is entirely exempt from its ravages, statistics show that the disease has been rarely encountered in the negro. The reason for this apparent racial immunity is incapable of either adequate understanding or reasonable explanation. The disease has been observed in practically every country inhabited by other than the purely black races. There is historical evidence to show that it prevailed among the aborigines of this country, and those familiar with Indian practice testify as to its frequency in that race at the present time. The astonishing statement is made that out of a total population of 100,000 Indians in Oklahoma, about 65,000 are afflicted by this malady! It is also claimed that from twenty per cent. to forty per cent. of the white school children of the same state are similarly afflicted, and that the disease prevails to lesser extent in Illinois, Missouri, Arkansas, Texas, etc. It is estimated that in the mountainous regions of Kentucky¹ between twelve per cent. and twenty-five per cent.

¹ For the information of those who may be unfamiliar with this subject, on March 9, 1914, a bill passed the Kentucky Legislature imposing certain duties upon the state and county and city boards of health, physicians, and others in regard to the prevention of blindness in the commonwealth. The law also confers the obligation upon every physician to report cases of "trachoma" within five days after his diagnosis.

The section in the new law bearing upon this subject reads: "And it shall be the duty of every physician to report each case of trachoma so diagnosed by him as attending or examining physician within five days after such diagnosis. And any physician, midwife, nurse, or head of the family who fails to make the report

of the population, including males and females, adults and children, suffer from the disease. Careful study of statistics induces the inevitable conclusion that the disease has markedly increased in this country during the last ten years, notwithstanding the advances and improvements which have occurred in education, hygiene, sanitation, and prophylaxis.

As a general proposition the disease is most commonly observed among the ignorant and impoverished classes; e.g., those living in unhygienic and unsanitary surroundings, where it is the custom for every member of the family to use the same wash-basin, towels, etc. The physical condition of the patient appears to bear no especial relationship to development of the malady, since it as frequently attacks individuals in robust health as those physically reduced by prolonged privation and systemic disease. When the disorder develops in penal institutions, orphan asylums, almshouses, etc., it almost invariably becomes rapidly disseminated, the reason for which is too obvious to require further comment. Likewise, when one member of a family is attacked, the malady promptly extends to others exposed to the contagion through the common use of towels, etc. However, this is a rule to which there are many curious exceptions. It sometimes happens that one or two members of the family escape the contagion, but no reasonable explanation can be suggested for this apparent immunity.

It is well understood that specific granular epiphycitis may be either acute or chronic, and that it affects alike the youth and the aged. Contrary to the generally-accepted opinion, however, it is occasionally so insidious in its development that the individual may be unaware of its existence until corneal complications and impaired vision ensue. On the other hand, the inflammatory granular lesions may cause the patient intense suffering from the beginning. Conjunctival irritation, photophobia, lachrymation, and pain are prominent symptoms. Obviously the more rapid and severe the course of the disorder the more intense the manifestations. The mucosa and

required by this act shall, upon conviction, be fined not more than one hundred dollars; and persistent failure or refusal on the part of a physician, midwife, or nurse to make such report or to take the necessary precaution to prevent the spread of such diseases shall be a proper ground for the revocation of the right of practice, after due notice and hearing, as now provided by law for the revocation of certificates to practise medicine in this commonwealth."

parenchyma of the lids become edematous, and following granulation and disintegration of the cellular elements the mucopurulent secretion becomes abundant.

One of the most constant indicative signs is the so-called "trachoma bodies" which may be observed by careful inspection after everting the lids. These small "sago-grain-bodies" are usually arranged in parallel rows in the superficial layers of the palpebral conjunctiva; rarely are they found upon the bulbar surface. Either the upper or the lower *cul-de-sac* may be first implicated. In chronic cases the conjunctival papillæ may become so extensively enlarged as to entirely obscure the existing granulations, and when disintegration occurs the secretion is correspondingly augmented. During the later stages atrophy, cicatrization, and destruction cause the characteristic deformity of the lids.

If the foregoing facts be borne in mind, the clinical diagnosis should not be difficult in any typical case. In certain instances, however, some difficulty may be encountered in making a prompt differentiation between specific granular epiphycitis and chronic follicular conjunctivitis.

Since the disease is preëminently infectious and more often than otherwise becomes chronic, and the chief characteristic is the production of serious impairment of vision from corneal involvement, obviously it must be regarded as one of the most dangerous ocular disorders. And, while the prognosis as to life of the individual is always favorable, there is great likelihood of irreparable damage being inflicted from extension of the pathology, with blindness as the logical ultimate outcome. Relapses have been frequently reported following apparent cures.

Among the greatest attending dangers are the infectious nature of the malady, and, in the absence of requisite prophylaxis, the facility and rapidity with which the contagium is disseminated. The statement requires no emphasis that when vision has been destroyed from complications, such as pannus, ulceration, corneal rupture, etc., restoration thereof is impossible by any method of treatment.

The most important feature relating to disease of any character is its adequate treatment, and in the management of infectious ocular affections unquestionably prophylaxis is entitled to first consideration. In the malady under discussion, since the conjunctival secretion con-

taining the requisite contagium is the most dangerous element, adequate prophylactic measures should be assiduously observed. Briefly these consist of cleanliness, personal hygiene, sanitation, proper ventilation to insure an abundant supply of fresh air, individual towels and articles of similar character, "running" water in all situations where several persons are permitted or required to perform necessary ablutions. It cannot be too strongly emphasized that "when the disease is once established, rigorous isolation of all those afflicted should be practised." In penal and other similar institutions where many persons are necessarily maintained in intimate association for extended periods efficient prophylaxis is usually difficult of accomplishment. Likewise, in the homes of the ignorant and destitute, where unhygienic and unsanitary living constitute the rule, prevention of dissemination of the disease may also be impossible. On the other hand, among the educated, or those who appreciate the importance of personal hygiene and sanitation, the disease is rare and extension from the original source practically never occurs.

The unsatisfactory and unsettled state of prevailing knowledge concerning the surgery or therapeusis of any particular disease may be reasonably determined by the multiplicity of remedies or methods of procedure recommended for its alleviation or cure, and specific granular epiphtycitis is entitled to the distinction of being classified in this category. There have been proposed such a multitude of remedial measures that to enumerate and specifically describe them, with the *modus operandi* of their intelligent employment, would unduly prolong this paper; therefore the writer's closing remarks will be confined for the most part to the plans of management which seem the most serviceable and applicable to the greatest number of cases.

In determining the applicability of remedial measures the primary objects to be borne in mind are: (a) To minimize conjunctival hypertrophy; (b) to induce prompt absorption or removal of existing granulations; (c) if possible, to prevent extensive destruction of the conjunctival mucosa; (d) to limit secretion and guard against complications which seriously endanger corneal integrity; (e) to restore the damaged structures to normal so far as may be practicable; and (f) to prevent deformity and impairment of vision.

Provided the patient be observed during the early stages, frequent cleansing of the conjunctival surfaces by suitable lotions may be advan-

tageously employed, and for this purpose the following combination has been found satisfactory:

B

Sodium chloride	dr. 1
Adrenalin chloride	dr. 1
Bichloride mercury (1 : 10,000) sol.....	one pint

If the granulations are recent and the oedema slight, complete resolution may be confidently expected from the faithful employment of this cleansing lotion. The treatment should be repeated t. i. d. and followed with copper citrate ointment. When photophobia and pain with corneal irritation are concomitant symptoms, instillations of atropine are indicated. If the conjunctival secretion continues to increase under the treatment mentioned, a mild solution of silver nitrate may be utilized. Prolonged treatment is usually necessary to effect a cure.

In the majority of instances the patient does not apply to the physician for advice or treatment until the disease has become chronic, indicated by the presence of extensive oedema, intense photophobia, pain, abundant secretion, and other characteristic symptoms. Under such circumstances—if for any reason surgical intervention cannot be undertaken—applications of silver nitrate constitute the most appropriate remedial measure. The strength of the solution will depend largely upon the conditions present. After the secretion becomes less profuse, copper, alum, zinc, etc., in proper solution may be beneficial in hastening resolution. Where self-treatment becomes necessary at the home of the patient, sulphate of copper solution is the safest remedy. Ointments are usually unproductive of benefit when their application is left to the patient.

As the disease is usually well advanced when the patient applies for treatment, more often than otherwise the invocation of surgery becomes imperative to afford relief. Numerous operative procedures have been recommended and practised—from simple grattage to complete excision of the conjunctival fornix. In the hands of the writer, however, the so-called expression operation, by either manual or instrumental means, has been productive of satisfactory results. The roller forceps devised by Knapp is a most excellent instrument for expressing the granulations. If preferred, Kuhnt's expressor or Noyes's oval forceps may be employed. Thorough crushing and expression of the

granulations between the thumb and fingers is an admirable method of treatment. Likewise, scarification, curettement, destruction with the galvano-cautery, followed by mercurial and copper citrate ointments, have been successfully employed. Destruction of the implicated areas by means of caustics, excision, etc., is inadvisable in the majority of instances. The treatment is too severe and the reaction which follows markedly increases the suffering of the patient.

Irrigations should not be used after the expression operation, excepting as a means of removing the resulting débris. The application of the ice-compress after expression is of considerable assistance in hastening recovery and promoting the comfort of the patient, and should be used for at least twenty-four hours. In chronic cases with pannus and ulceration, hot applications are more agreeable to the patient, and in such cases there is no objection to their employment. The applications should be changed every few minutes, so that an even degree of heat or cold may be maintained.

In uncomplicated cases in adults manual or instrumental expression may be accomplished under cocaine anaesthesia, but in severe cases and in children a general anaesthetic is necessary. For this purpose either nitrous oxide gas or ether may be employed.

Owing to the delicate corneal structure, pannus is one of the most difficult and unsatisfactory complications with which the physician has to deal, and the exercise of great care is necessary to prevent injury. However, removal of this new formation may usually be successfully accomplished by repeated applications of an appropriate caustic. In a few cases excision and the actual cautery have been satisfactorily utilized.

As may be readily understood, xerosis is a most annoying complication, but relief may be obtained by palliative treatment, such as the application of glycerine, ichthyl, olive oil, or vaseline, several times daily.

Radium has been employed in the treatment of this disorder, but the writer has had no experience therewith. The results, however, have not been very encouraging from the use of this agent, according to available records.

When iritis becomes an annoying symptom it may be controlled by the instillations of atropine. The treatment of ulcerations is governed entirely by the conditions presented in the individual case.

Deformity of the lids, which occurs as a terminal result of specific granular epiphycitis, together with trichiasis, entropion, and ectropion, is best treated by the intelligent application of modern surgical principles. Plastic operations should be undertaken in suitable cases, and satisfactory results may be confidently expected to accrue, not only from the standpoint of restoration of function, but the cosmetic effect is of considerable importance to the unfortunate patient.

The action of the Kentucky Legislature and State Board of Health is certainly to be commended, and should receive the hearty approval of every physician in the commonwealth.

(*Note.*—For many of the data incorporated in the foregoing paper the writer is indebted to the admirable article by Posey in Sajous's Analytic Cyclopedia, vol. iii, 1913, to whom it is desired full credit be extended.—J. R. W.)

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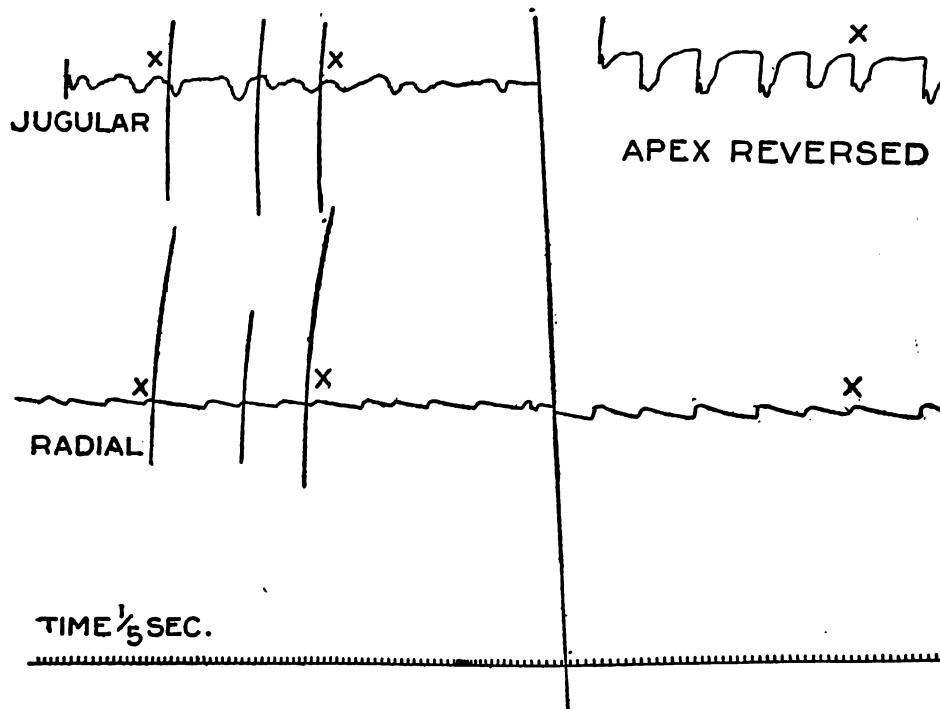
THE VENOUS PULSE AS AN AID IN THE DIAGNOSIS OF HEART-DISEASE

BY THOMAS E. SATTERTHWAITE, M.D., LL.D., SC.D.

New York

THE arterial tracings of a polygram register the activities of the left ventricle when the aortic valves are open. Apical tracings also furnish similar information of the left ventricle during a like period,

FIG. 1.

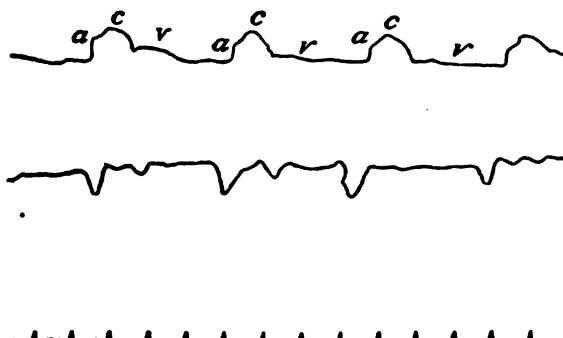


Extrasystolic arrhythmia of the ventricular type, from a patient with mitral stenosis, tricuspid regurgitation, and auricular paroxysms. (Taken from the author's "Cardio-vascular Diseases," 1913.)

unless the right ventricle happens to impinge on the chest wall, when the record covers the activities of the right ventricle so long as the pulmonary valves are open. In these latter instances the apical tracing is reversed (Fig. 1).

On the other hand, a phlebogram registering the venous pulse, and usually through the jugular, furnishes a record of the activities of both right auricle and right ventricle, and of the left ventricle through the carotid; for when the metal receiver is placed over the right jugular it almost necessarily catches the impulse of the carotid, which forms a distinct wave (*C*) in the venous tracing (Fig. 2). And so it gives more information than an arteriogram. Venous tracings are also obtained from the femoral vein, the liver, and elsewhere.

FIG. 2.



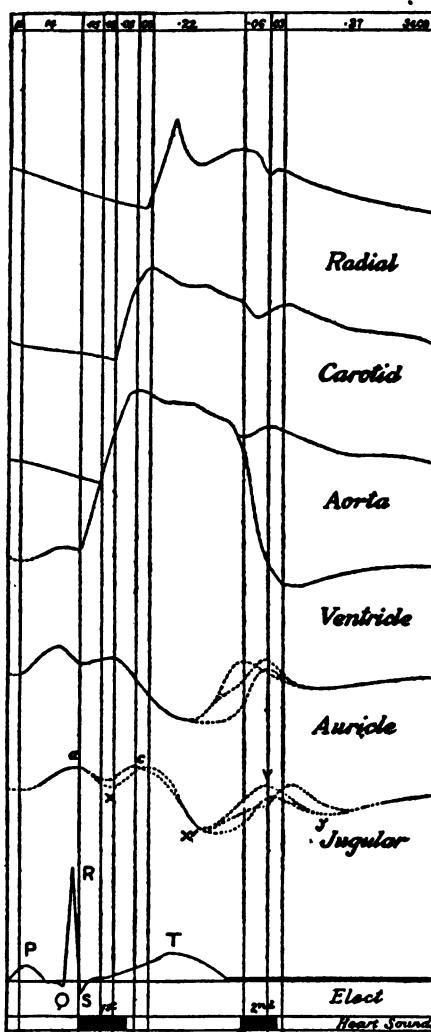
Polygram taken by the author in a case of compensated aortic stenosis and mitral regurgitation. The upper tracing represents the normal venous pulse, the middle the cardiovascular tracing by the author's spring recorder, while the lower gives the time in fifths of seconds by the Jacquet time-marker.

But, while they throw light on rhythmicity, conductivity, irritability, and contractility, venous tracings are of special value in the diagnosis of (1) tricuspid insufficiency, (2) heart-block, (3) perpetual arrhythmia, (4) auricular fibrillation in general, (5) auricular paresis, and (6) in distinguishing auricular from ventricular extrasystoles. Tracings of these several conditions are given.

Fig. 3, a composite diagram based on the models of Frey, MacKenzie, and Lewis, gives a schematic representation of the waves and depressions of the radial, carotid, aortic, cardio-apical, auricular, and jugular beats as compared with electrocardiographic and phonographic tracings, all registered in fractions of seconds. The length of the cycle is set at one second—actually $\frac{1}{100}$ of a second. It will be noticed that in the auricular and jugular waves there are more variations than in the other tracings; also that in the electrocardiogram the wave *R* anticipates in time the first ventricular wave, and the wave *T* the

final ventricular wave. The explanation is that the electrogram registers the contraction of the papillary muscles, which precedes the con-

FIG. 3.



Composite diagram constructed by the author from the models of Frey, Mackenzie, and Lewis.

traction of the more solid parts of the myocardium. If this theory is correct, papillary contractions are not registered in the ordinary graphic tracings. The *P*, *R*, and *T* of this electrocardiogram are the

standard letters employed in the notation of electrocardiograms in the English-speaking world.

Fig. 3 gives a fairly correct scheme of the contemporaneous happenings in the several cycles. The diagram also shows the relative time of each wave or depression, and the actual average time, and the relation in time of any one wave or depression to any other, in fractions of seconds, assuming the rate of the pulse to be 60. The letter *a* in the jugular tracing indicates the top of the rise in jugular systole, but it corresponds in time with relaxation of the auricle, and at the same time with the beginning of ventricular systole, and is shown in the electrocardiogram by the end of the first wave of ventricular contraction *R*. The letter *C* in the jugular tracing corresponds with the summit of the carotid wave. The summit of the jugular wave at *V* corresponds with the wave following the dicrotic notch in the aorta and carotid, and marks the end of systole in both ventricles. The auricular and ventricular waves are composite; that is, they represent the combined activities of both auricles and both ventricles. In point of time, however, the right auricle and right ventricle slightly precede the left auricle and left ventricle. These *A*, *C*, and *V* waves are the keys to the interpretation of the jugular pulse.

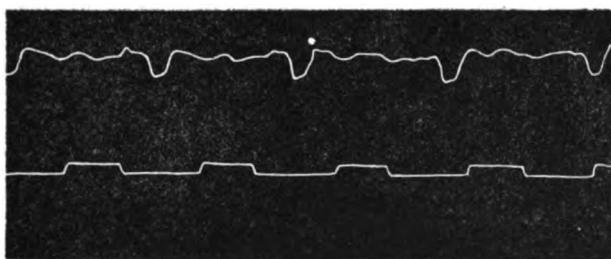
On the other hand, the depression *X* following the jugular wave *A* corresponds in time with the beginning of systole in the carotid, while the depression *X'* following the wave *C*, and indicating the extreme of auricular relaxation, corresponds pretty nearly to the final systolic wave in the carotid, aorta, and ventricle, and is shown at *T* in the electrocardiogram, though, for the reason already given, the latter tracing slightly anticipates in time the carotid, aortic, and apex waves in the graphic tracings. The letter *Y*, marking the point at which the jugular rise is beginning, corresponds to the middle period of ventricular diastole, and indicates that the blood which has been stored in the right auricle during ventricular systole now begins to flow into the right ventricle through the tricuspid valves. In the electrocardiogram the capital letter *Q* indicates the slight fall after the contraction of the His bundle. The capital letter *S* indicates the fall that follows the initial systole designated by the capital letter *R*.

At the foot of the diagram the relation of the two heart-sounds

to the waves is shown schematically, and also their relation in time to each other.

From what has already been shown, however, it is plain that the interpretation of the venous tracing is beset with some difficulties. And one has but to look over a series of phlebograms in the literature to be struck with this fact. The waves and depressions are not only more numerous and unsymmetrical than those in other graphic tracings, but they are sometimes so dissimilar that they appear to be merely a medley of disorderly movements. But, though we are apt to look upon the tracings of the radial or apex beat as orderly records of standard events (and this especially the case with cardiovascular tracings, as shown in Fig. 4, where the five waves corresponding to those

FIG. 4.



The upper tracing, taken by the author's automatic recorder, shows fairly well the five waves of the Einthoven electrogram, including the final wave of the cycle, attributed to the action of the His bundle.

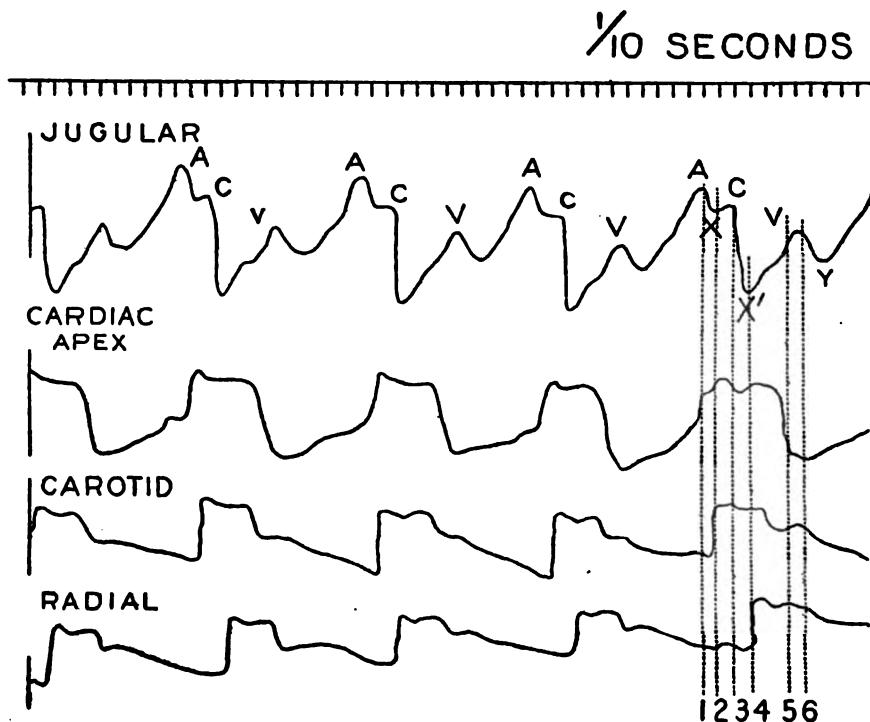
The lower tracing is that of the author's electric time-marker.
Small abscissæ, $\frac{1}{10}$ second; large, $\frac{1}{5}$. Rate of pulse, 60.

of the Einthoven electrocardiographic scheme are shown, and occasionally the sixth wave), this is not always true. In fact, these tracings also may be undecipherable, and for various reasons; but, as a rule, they present fewer difficulties than venous tracings.

In Fig. 5 is shown a diagrammatic scheme of contemporaneous tracings of the jugular, apex beat, carotid and radial, where, by a study of the dotted lines 1, 2, 3, 4, 5, and 6, the relations in time of the jugular waves and depressions to those of the other tracings can be readily seen. In instances where the several waves of the jugular are distinct and uniform in size there is no difficulty in interpreting both their significance and their relation in time to the waves of the other tracings; for the phlebogram, as illustrated by the jugular tracing in Fig. 5, is composed of three distinct waves. The first of these,

the auricular, or *A* wave, anticipates ventricular systole, being coincident with the contraction of the auricles. The second wave (*C*), known as the carotid, is to be attributed to the communicated impact of the carotid. The third wave (*V*) is called the ventricular; it corresponds in time with the dicrotic wave in the radial. The notch after the *A* wave marks relaxation of the auricle; that after the *C*

FIG. 5.



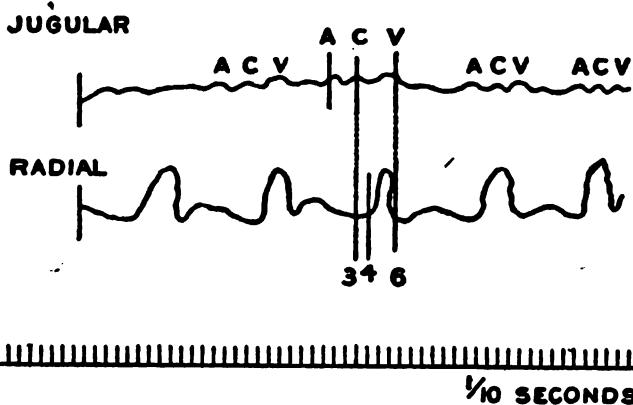
Diagrammatic representation of contemporaneous tracings of the jugular, apex beat, carotid and radial. (Taken, with some modifications, from the author's "Cardio-vascular Diseases," 1913.)

wave denotes auricular diastole; that succeeding the *V* wave indicates ventricular diastole and the passive period of the cardiac cycle. The numerals 1 to 6 refer to the contemporaneous events in the four tracings, so that their effects can be plainly observed in each case. At 1, auricular systole is seen in the jugular. At 2 systole begins in the ventricles. At 3 the aortic and pulmonary valves open. At 4 the radial is seen contracting about one-tenth to two-tenths second after the

carotid. At 5 the aortic and pulmonary valves are closing. Between 1 and 3 is the interval between the beginning of the auricular systole and the opening of the aortic valves; it is called the *a-c* interval.

In the venous tracing shown in Fig. 6 the wave *A* is undoubtedly due to auricular systole, and the depression *X* to auricular diastole, as also the depression *X'*; but there may be other causes operating to produce these depressions. Mackenzie enumerates the following as such causes: (1) the dragging down of the *a-v* septum by ventricular muscles operating at the time, enlarging the cavity of the auricle, and (2) diminished intrathoracic pressure due to expulsion from the chest of the contents of the left ventricle, these two factors being especially

FIG. 6.



Method of interpreting the jugular pulse.

effective in causing the larger depression, *X'*. The wave *V* was so called by Mackenzie because associated in time with systole of the right ventricle, its summit corresponding in time with the opening of the tricuspid valves. The variation in the time at which it occurs was credited by him to the variable amount of blood stored in the auricles and the variable conditions of the tricuspid valves. If incompetent, this wave would naturally occur earlier than otherwise. But clinically incompetence of the tricuspid is very rare, and seen chiefly in violent attacks of heart-failure or in articulo mortis.

The method of analyzing the jugular tracing in a normal radial pulse of 72 is as follows (Fig. 6): Make a downstroke at right angles to the time-marking line, at the beginning of the radial upstroke

marked 4. Then draw another vertical line one-tenth second or so in advance of it, so as to pass through the top of the middle jugular wave of the three in series. The carotid wave, as we have seen, anticipates the radial by one-tenth to two-tenths second, and corresponds to the middle wave; in fact, it makes this wave. It is, accordingly, to be marked *C*. Now measure the distance from the beginning of the tracing to 3. Measure off a like distance in the jugular, and it should strike the top of the middle wave. This is a corroborative indication that the letter *C* is correctly placed. But the auricular systole occurs about two-tenths second earlier. Draw a vertical line about two-tenths second farther in advance; let the line pass through the crest of the wave, and the wave of auricular systole is thereby located. Mark it *A*. The dicrotic notch, which corresponds approximately to the top of the third jugular wave, marks the closure of the tricuspid and mitral valves. Mark this point with the letter *V*. These three letters are the keys to the interpretation of the jugular pulse; the letters indicating the depressions, as shown in Fig. 5, can be added if need be.

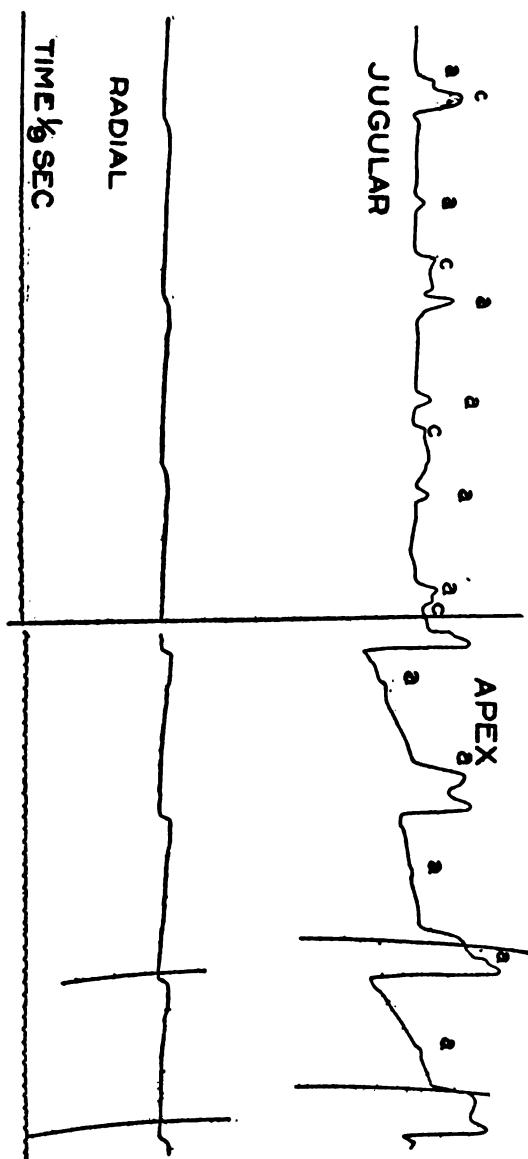
Having described the curves of the normal venous pulse, its variations will be alluded to. For example, there is the ventricular type of jugular pulse, where the jugular pulse corresponds in time to the systole of the ventricles; i.e., venous systole and venous diastole are contemporaneous with ventricular systole and diastole (Fig. 1).

This is the form of jugular pulse that is common in tricuspid regurgitation, and it is one of the important signs of that affection, though not pathognomonic. The rationale of its occurrence in such a condition is as follows: The column of blood is driven into the right auricle with such force that the jugular pulse corresponds in time to the carotid; if, however, after a time the right auricle becomes so distended that pulsation in it diminishes and finally disappears, the *V* wave corresponding to systole of the right ventricle supplants the *A* and *C* waves, and occupies the entire period of ventricular systole.

Another cause may be auricular fibrillation (Fig. 10); or it may be due to an ectopic impulse. The rhythm is usually disorderly, but may be normal. The pulse-rate may be slow or fast. There may be much difficulty in differentiating it, as the causes may be indeterminate and graphic characters variable.

In Fig. 7 is seen an instance of complete heart-block, in which the auricular contractions are indicated in the jugular and apex tracings

FIG. 7.

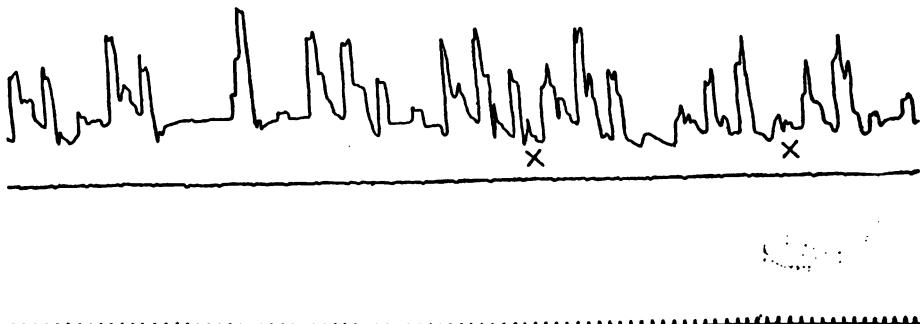


Complete auriculoventricular dissociation (heart-block). In this illustration is seen, on the right, the tracing of the left ventricle. The 'a' wave denotes the auricular contraction. The case is one of the Adams-Stokes syndrome, with heart-block. There were sixty-four auricular contractions per minute to thirty-eight ventricular. There is seen to be no fixed relation in time between the auricular and ventricular systoles. (Taken from the author's "Cardio-vascular Diseases," 1918.)

by the letters *a a*. In the jugular it will be seen that the *a-c* intervals are all of different length, showing that there is complete auriculoventricular dissociation. Though heart-block may be diagnosticated independently of graphic methods, venous tracings give a record of its general character and degree that is definitely registered.

In general the distinctions between the extrasystoles of the auricular form and those of the ventricular are as follows (Figs. 8 and 9): In the former type the ventricle coordinates regularly with the auricle; that is, the ventricular response, though brief, is normal in point of time, while the compensatory pause is not complete. In the ventricular form (Fig. 1) the contraction is usually coincident with the auricular, the beat of the auricle corresponding in time with the *V* wave of the

FIG. 8.



Auricular type of extrasystolic arrhythmia, taken by a slow-moving kymograph. The extrasystoles are seen at *X X* in both jugular and radial tracings. Time in fifths of seconds.

arterial cycle. Compensation is fairly complete, and there is no permanent disturbance of the regular rhythm. On these lines the diagnosis may usually be made in a polygram. Ritchie¹ prefers to substitute the term supraventricular for auricular, including, under his term, sinus, nodal, and bundle impulses.

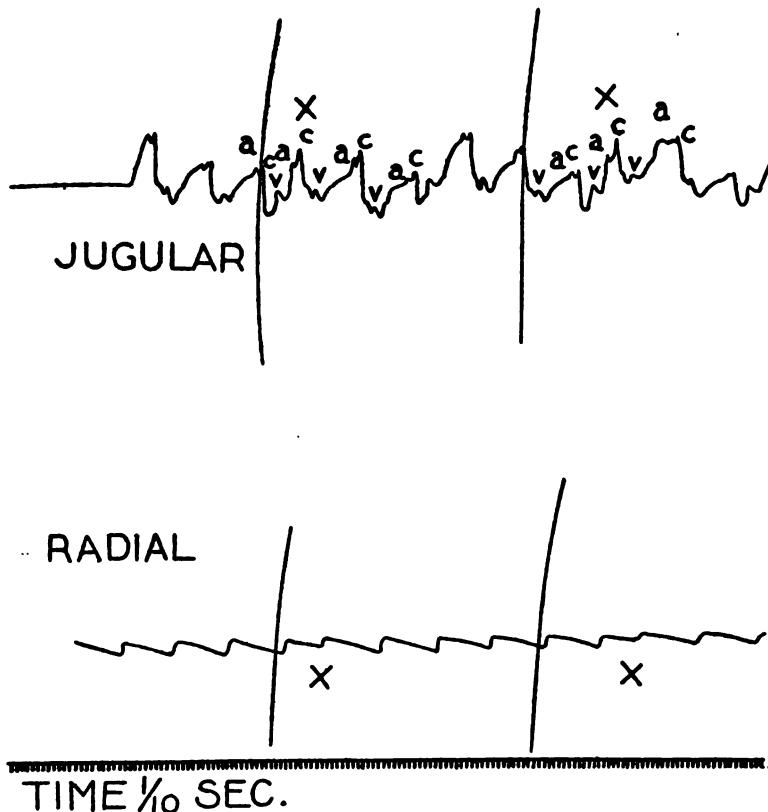
Extrasystoles are extra (that is, supernumerary) contractions apart from those that normally originate in a node, and occur while the normal rhythm continues otherwise undisturbed. A possible explanation of their etiology is as follows: If at any time there is dilatation of an auricle, as in mitral stenosis, incomplete expulsion of the blood into the ventricle may stimulate the auricle to an extrasystole. The

¹ "Auricular Flutter," 1914, p. 14.

stimulus for the contraction arises ectopically in the auricle; that is, without the radius of the conducting impulses, which are the *s-a* and *a-v* nodes and intermediate tissues (Figs. 1, 8, and 9).

If, on the other hand, the left ventricle for any reason fails to

FIG. 9.



Extrasystolic arrhythmia of the auricular type. This polygram represents an extrasystole originating in an auricle. In the jugular tracing the extrasystoles are shown at *XX*. The *a* (auricular) waves represent the contractions of the right auricle. The extrasystoles are shown also in the radial tracing at *XX*. The compensatory pauses in the radial tracing are seen to be shorter than with ventricular extrasystoles. (Taken from the author's "Cardio-vascular Diseases," 1913.)

empty itself, the residual blood may stimulate the ventricle to make an extra beat before the normal auricular stimulus has reached it. It can easily be understood that where an auricle or ventricle has been strained, as by heavy lifting or any sort of athletic competition, an extrasystole may be thrown in to aid a weakened chamber in expelling

its contents. These extra, supernumerary, or supplementary contractions have been called "dwarf," from their small size; "premature," because they anticipate a normal contraction, and "interpolated," because they are interposed between beats that are of the normal prevailing type.

Extrasystoles of the ventricular type are seen in Fig. 1. They occur at *X X* in both upper and lower tracings. In both cases the small size of the beats serves to distinguish them from the other beats, which are longer and of more uniform size. But this ventricular form is determined by the fact that the length of the pulse period preceding the extrasystole, added to the length of the one following it, makes, on an average, two of the prevailing pulse periods. In the auricular form the pulse period following the extrasystole is shorter than in the ventricular form.

Extrasystoles occur at regular or irregular intervals. They are especially common among persons who have an irritable or excitable heart. They may sometimes be distinguished by the finger, or are recognized by auscultation when, in the course of a series of regular beats, there are one or two short sounds followed by briefer pauses. They are easily differentiated by polygrams, but rather better by electrocardiograms.

Extrasystoles occur under varying conditions. Coffee, tea, tobacco, and gastro-intestinal distention are examples of determining causes. Under these circumstances they may not be of very serious import, though in toxæmia, in convalescence, or in the weak heart they add to the gravity of the situation. Occurring in conjunction with other cardiac manifestations, they constitute a further complication.

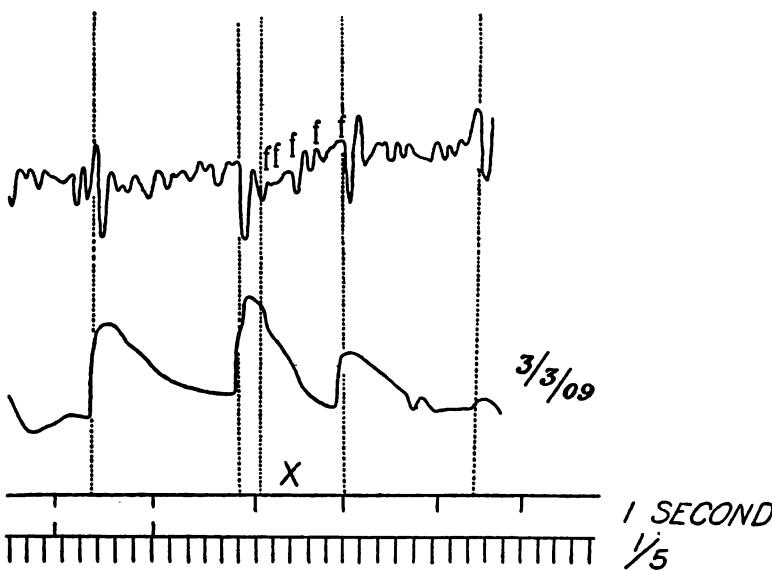
Not infrequently the extrasystole is appreciable by the patient, who feels a sudden thud in the precordium, perhaps with a sense of faintness. It may even seem as if the heart were going to stop. But extrasystoles are not always appreciable subjectively. To make them distinct, the patient should be told to run around the room a few times and then hold his breath. Extrasystoles are intensified by hurried movements.

Another example of auricular arrhythmia, called until recently nodal rhythm (Mackenzie), and one form of the permanently irregular pulse (Hering), is perpetual arrhythmia due to auricular fibrillation, proved to be such by Lewis in 1909. Experiments on the lower animals

with comparison of arterial and venous pulse tracings seem to have established Lewis's views on this point. In fibrillation there arises in the auricle a shower of stimuli, which falling on a node excite it to send impulses to the ventricle as fast as it is capable of taking them up.

According to Ritchie,² extrasystoles, fibrillation, and flutter are all conditions caused by the varying strength of the stimulus applied to the

FIG. 10.



Auricular fibrillation in a case of Adams-Stokes's disease where the arterial pulse was 36. Fibrillation in the space X at the rate of 300 to the minute. (From a polygram by the author.)

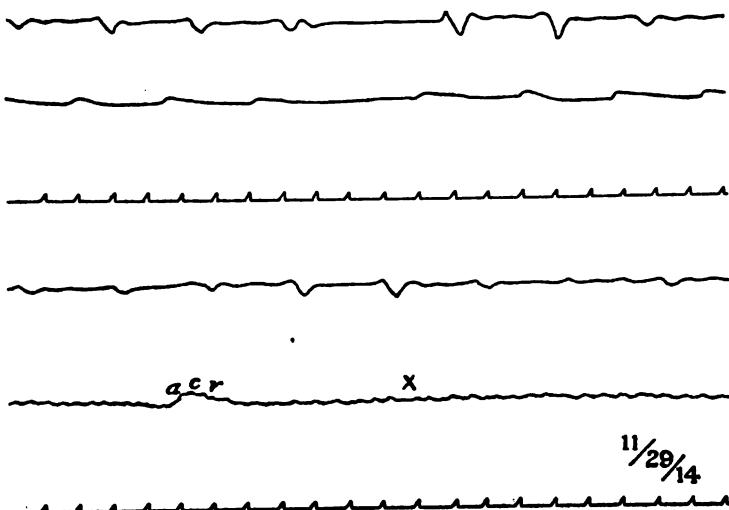
auricular muscle, and they represent successive stages in the abnormal stimulation of the auricle. There is increased excitability, combined with defective conductivity. The basal cause may be interstitial myocarditis, especially of the right auricle; inflammation of nodal structures, fibrosis of a node, or in the conducting system. Of systemic diseases rheumatism is probably the most common cause of the permanent form. According to Lewis, at least fifty per cent. of cardiac arrhythmias are due to auricular fibrillation, and it seems likely that the real percentage is even higher. There are two forms, the temporary and the permanent (perpetual arrhythmia).

² "Auricular Flutter," 1914, p. 22 *et seq.*

The rate of the pulse may be low, as in Fig. 10, or even as high as 700 and more (Fig. 11), but, as heart-beats sometimes fail to reach the radial, the pulse-rate in itself is not a reliable guide as to the frequency of the heart-beats.

Lewis rests his diagnosis of auricular fibrillation on the absence of a normal auricular contraction, the presence of a ventricular beat in normal response to the auricular impulse, and irregular oscillations in the venous tracing, due to contraction of various parts of the auricle and having no normal relation to ventricular contraction. These

FIG. 11.



Polygram of a patient with aortic regurgitation, chronic diffuse nephritis, auricular paresis and perpetual arrhythmia. The second line shows how it was controlled by digitalis. At X, rate of flutter 480 to the minute.

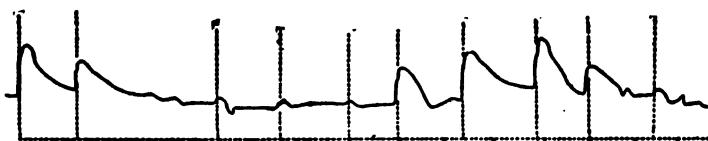
points are shown in Fig. 11, where in the fifth tracing of the polygram it will be seen that there is only one auricular contraction, and it is imperfect. Consequently there is no normal relation between the auricular and ventricular contractions, but at C there is the carotid impulse, and a corresponding upstroke in the cardiovascular pulse showing a ventricular response to the auricular. Also, in the fifth line at the point X there are eight irregular oscillations or fibrillations to the second, or 480 to the minute. This is a pronounced case of auricular flutter. Under the action of digitalis the flutter disappeared, as may be seen in the second line of the polygram.

Another characteristic of auricular fibrillation shown in Fig. 12 is that no two successive cycles are of the same length. This is the criterion in most common use. The polygram was taken by the author from the patient whose tracing is shown in Fig. 10.

Perhaps the precordial pain and sense of palpitation in heart-disease commonly ascribed to dilatation are in reality due to auricular fibrillation. In this I am inclined to believe with Lewis.

Digitalis is the most effective drug for use in these cases, far surpassing strophanthus as to continuous action. It should be pushed until the pulse falls to 80. In the temporary form treatment by digitalis or its congeners will correct the difficulty more or less effectively, but in the permanent form there can be no cessation in the use of these drugs, and of digitalis more especially. The prognosis, however, is always unfavorable, patients at best living but a few years.

FIG. 12.



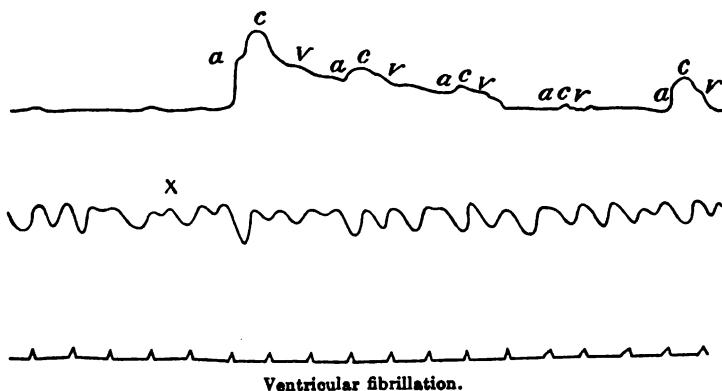
Auricular fibrillation with partial heart-block in a male with Adams-Stokes's disease. Pulse 40. Time markings in seconds and tenths of seconds. (Taken from the author's "Cardio-vascular Diseases," 1918.)

The ratio of these fast auricular contractions in fibrillation to those of the ventricle is variable, but usually about four to one (see Fig. 11). The distinction between fibrillation and flutter is of little consequence; it is one of degree, not of kind. Flutter is very common, fibrillation less so. Vibrations up to 700 and more are occasionally shown by the polygram. In Fig. 11 there are thirteen fibrillations to the second in the first second, or 780 to the minute. The waves are more sharply defined in an electrocardiogram. In fibrillation it seems as if a few fibres of the auricle contract, and in flutter the whole auricle, but the two conditions are so closely associated that one may follow or precede the other. Vibrations under 200 are classed under the head of fibrillation; those above that number under the head of flutter.

To illustrate the differences in polygrams between auricular and ventricular fibrillation, I introduce two polygrams taken by myself in

the case of a patient who came to me on June 9, 1914. His face was mottled and swollen. No pulse appreciable in radials, temporals, or posterior tibials. Pulse-rate by spring recorder 100 to 120, and irregular. Aortic regurgitation: second pulmonic and aortic sounds intensified. Apex about one inch below the nipple. Breadth of heart increased. Sahli's band. Spleen enlarged, but not tender. The chronic pneumonia of heart-disease. Cardiac inefficiency shown by Schapiro's test. Expectoration yellow but scanty. Urine, 27 ounces, sp. gr. 1015 and 1015; albumin 10 per cent. Hyaline and granular casts containing blood-cells. Free blood-cells. Under digitalin, strophanthin, and nitroglycerin in $\frac{1}{16}$ -grain doses five to six times a day the pulse fell to 92 and the urine rose to 64½, naturally giving great

FIG. 13.



relief to the patient. In the polygram Fig. 13 is seen his partial heart-block, as shown by the variations in length of the *a-c* intervals (also auricular paresis) to the left of the lettering. In the middle or cardiovascular tracing (which corresponds in time to the radial tracings of ordinary machines) is seen ventricular fibrillation, or, more correctly, flutter. A series of forcible waves takes the place of the ordinary smaller waves and wavelets of the arterial tracing, at the rate of 450 to the minute, and they are coupled at *X*. The case proved to be one of perpetual arrhythmia, which to my notion implies myocardial disease.

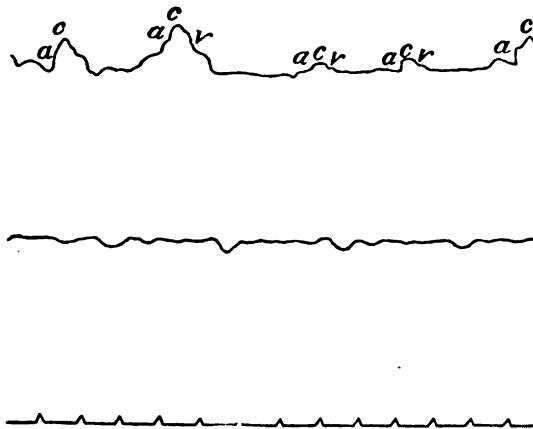
Fig. 14 shows that under the medication as stated the paresis improved and the ventricular fibrillation disappeared; also, to some ex-

tent, the heart-block. Dr. S. Neuhoef, who took an electrocardiogram and orthodiagram of the case, confirmed my diagnosis of cardiac hypertrophy and myocardial disease. The patient remained but a short time under my care, and the relief was not maintained; he died some three months later.

There are some anomalous forms of the venous pulse that are difficult to interpret. Some are due to respiratory movements interfering with the pulse, others to variation in the rate of the blood current. The greater the speed of the blood current, the greater the irregularities. All forms of the frequent pulse are subject to such irregularities.

Though we do not know the conditions that give rise to a visible

FIG. 14.



Tracings showing disappearance of the fibrillation seen in Fig. 13.

venous pulse, it is certain that persons in good health have it, while in pronounced heart-failure it may be absent. In pregnancy it occurs in some and is absent in others. These are facts that invite inquiry. The venous pulse is obtained without much difficulty in about eighty per cent. of persons, probably in all. Barringer was able to get it in all his patients, though in some of them only after active exercise.

In taking the liver pulse a special receiver is required. It should be large and oblong. After the knees of the patient have been drawn up, it is applied to the surface of the liver, being pushed up under the free border of the ribs. To this receiver one end of the rubber tube is attached, and the other to the pen-arm and tambour.

In securing a phlebogram the position which the patient should assume differs with the kind of recording instrument used. Sometimes, and usually, it is best for the patient to lie down; at other times, as when the jugular veins are greatly distended, the tracing may best be taken in the erect position. In placing the patient in the recumbent posture the shoulders should be slightly raised, the head resting on a pillow and turned slightly to the right, so as to relax the right sternomastoid muscle. A receiver, such as the Mackenzie brass cup, is then placed over the jugular bulb, close to and above the inner end of the right clavicle, and pressed down so as to exclude the outer air. Usually the tracing is best taken by pressure over the bulb, but at times the instrument may have to be applied over the veins higher up, or it may be necessary to utilize the veins on the left side. Personally I take my tracings in the erect position, because it is better adapted to my instrument, the spring recorder.

Figs. 2, 4, 8, 10, 11, 12, 13, and 14 were made from kymograms taken by the author's recorder and attachments. Figs. 1, 7, and 9 were taken for the author by Dr. T. B. Barringer, Jr., with his machine. Figs. 3, 5, and 6 are schematic diagrams constructed by the author from older models.

THE DIFFERENTIAL DIAGNOSIS OF HYDATID CYST OF THE LIVER ACCOMPANIED BY ICTERUS

BY HENRI BERTENET, M.D.

Montmarault, France

HYDATID cysts of the liver may be accompanied by icterus, although this symptom is most uncommon. The jaundice may come on after rupture of the cyst into the intrahepatic biliary tract or arise from compression of the organs situated at the hilum when the cyst is situated on the under aspect of the organ. This compression causes anatomical lesions of the liver similar to those produced by ligature of the choledochus, and there is complete or partial jaundice, an enlarged liver, with or without enlargement of the spleen. There may or may not be an elevation of the temperature, and even with suppuration of the cyst the temperature can remain normal.

In considering the differential diagnosis two questions must be considered, viz., the positive diagnosis and the differential diagnosis of hydatid cysts of the liver. The first may be dispensed of in a few words. The characteristic points of hydatid cyst of the liver are a slow evolution, without acute manifestation or fever. While the cyst develops anatomically compensatory hypertrophy of the hepatic parenchyma occurs, as has been demonstrated by Hanot and later by Chauffard, and thus the organ can reach large dimensions before signs of hepatic insufficiency or functional symptoms ensue. The functional symptoms are not marked, there being principally anorexia for fatty food, as shown by Dieulafoy; sometimes vomiting, diarrhoea, and pain in the right shoulder so frequently complained of in diseases of the liver. And, lastly, there is a symptom that many clinicians consider as almost pathognomonic or at least as having a considerable diagnostic value. I refer to *urticaria*. This symptom should be insisted upon, because when dealing with an affection so difficult to recognize as hydatid cyst of the liver nothing which will enable us to make a diagnosis should be neglected, and the smallest

sign is here important, particularly when it is as constantly present as is urticaria.

But all these functional signs are in reality of little import, and the only really distinct data are to be obtained by physical examination of the patient.

An individual with a hydatid cyst of the liver, particularly when in hospital practice and who is a workingman, will only consult in the last extremity when there already exists a large, rounded tumefaction in the right hypochondrium. However, usually when the cyst develops on the under surface or on the anterior aspect of the liver it may be differentiated, especially by palpation. Under these circumstances it presents as a quite circumscribed tumor, forming a distinct globular projection in the liver. Although having a liquid content, fluctuation is hardly ever met with; the cystic pocket is tense and resistant. It is smooth and rounded, and if superficial it does not adhere to the abdominal parietes. And, lastly, it is an indolent tumor, and, if sometimes some pain can be elicited by pressure, this is undoubtedly due to some inflammation of the surrounding structures, and perhaps to a slight degree of infrahepatic peritonitis.

By percussion these cysts give a dull sound, but sometimes a band of resonance will be detected, due to the interposition of the colon, and this may interfere with the diagnosis. But the true pathognomonic sign obtained by percussion of the right hypochondrium is the *hydatid thrill*, a sensation of a vibrating shock perceived by the fingers, and when present makes the diagnosis evident. Unfortunately the rather great inconstancy of this symptom renders it unreliable, so that one must make the diagnosis of hydatid cyst of the liver with the signs that I have already mentioned.

However, there is still another symptom which is not absolutely constant, but which is very often observed. I refer to hypertrophy of the spleen. In most of the reported cases (I have been able to collect six in the literature, and one of my own, making seven in all) the spleen has been enlarged, and distinctly evident by palpation and percussion.

But when in a given case all these symptoms cannot be found, or, on the other hand, should they all be present in the same patient, one must at least discover them. They must be differentiated and placed in a group forming a morbid entity quite distinct from other

affections of the liver and biliary tract giving rise to icterus. In a word, it is necessary to make the diagnosis with a series of lesions which I shall enumerate, some being hypertrophic lesions of the liver, others the lesions of the biliary tract.

In the first place, let us consider Hanot's hypertrophic cirrhosis, then cancer of the biliary tract and lithiasis of the choledochus, all being diseases to be differentiated from hydatid cysts of the liver. Then it is to be recalled that a cancer of the head of the pancreas may compress the choledochus, giving rise to hypertrophy of the gall-bladder. And, lastly, we have pylephlebitis.

It is to be understood that I purposely leave aside all cases of hydatid cysts developing on the convex aspect of the liver, because in this paper only these cysts accompanied with jaundice are in question, and it is only those instances in which the cyst develops on the under aspect of the liver that icterus can arise, because I also leave aside cases in which the cyst is accompanied by jaundice from infection of its cavity, rupture of the cyst, and obstruction of the choledochus by a gall-bladder. In other words, I limit my remarks to hydatid cysts of the liver, with or without suppuration of their contents, taking on the characteristics of abdominal tumors of slow evolution and which cause icterus simply by their presence within the abdomen acting as the agent of compression. In point of fact, a hydatid cyst of the liver can give rise to icterus only when it is seated in the under aspect of the liver, and even when it is open it is exceptional that it causes icterus if it is not seated on the under surface or, at any rate, at the lower part of the hepatic parenchyma. Consequently it need only be differentiated from the lesions that I have enumerated.

I shall now take up the question of differential diagnosis, first eliminating the easy diagnoses; then there will remain a lesion really difficult to differentiate with that which we are considering, namely, Hanot's cirrhosis.

The question of the diagnosis of hydatid cysts accompanied by icterus, with affections of the biliary tract and cancer of the pancreas, should be treated in a very general way. One must differentiate hydatid cysts of the liver from all diseases of the biliary tract in which there are enlargement of the gall-bladder and icterus. It is quite useless to speak of each of these affections in succession; the same

signs bring them together and separate them from hepatic cysts. One may be dealing with a calculus of the choledochus, with an obstruction of the biliary tract from cancer developing in some portion of it or in the pancreas, but in all such cases when there is either bile or an hydropic fluid in the gall-bladder, distending it and giving the impression of a liquid tumor, this tumor has the same characteristics and is just as difficult to differentiate from a cystic tumor of the liver. It is certain that if one is dealing with an acute calculus cholecystitis the diagnosis does not present the same difficulties, because the patient suffers in the region of the gall-bladder and has had biliary colic, while the gall-bladder is atrophic and sclerous. But if there is a hydrops of the gall-bladder or a biliary retention within it, as occurs in the affections enumerated above, things are quite different. There is then a tumor in the right hypochondrium, with indefinite contours comprising the lower border of the liver and the gall-bladder, surrounded by an area swelling due to a fibrous pericholecystitis and a mass of perivascular adhesions. If the fluid collection in the gall-bladder becomes sufficient in amount the tumor can assume very large proportions. By palpation it is resistant, the walls are smooth, and it moves very readily with the respiration. In other words, all these signs are similar to those of a cyst of the liver. Occasionally one may, it is true, isolate the gall-bladder, feel its fundus as a large, convex mass in its anatomical position and distinct from the lower hepatic border, but this condition is not common.

It is, consequently, by the functional symptoms that the diagnosis will be made; the occurrence of hepatic colic in cholecystitis should allow of differentiation, but, without considering that the colic may be so slight as to be overlooked by the patient, it can very well happen that a subject with a hydatid cyst may have had hepatic colic in the past.

One may also be dealing with a calculus of the choledochus which has occluded the duct, preventing the onward flow of bile, and brings about all the symptoms of hepatic insufficiency without any reaction in the gall-bladder. This is simple lithiasis of the choledochus, a serious affection, exhausting the patient's strength to such an extent that he may lose as much as fifty or sixty pounds in a few months.

Here again there are painful phenomena in the form of hepatic

colic which represent the principal element in the diagnosis with cysts of the liver.

Generally the subjects who develop lithiasis of the choledochus have a marked hepatic history, with elevation of the temperature, even with great oscillations.

Beyond these functional symptoms, which are subject to the same criticism as those of cholecystitis, but which, however, often permit one to make the diagnosis, there is a point that Gauthier and, later, Chauffard have well shown; namely, the decrease in the assimilation of fats in cases of lithiasis of the choledochus. Chauffard examined a patient in this respect before and after operation which did away with his calculi.

For this purpose he followed Gauthier's technic, giving the patient a test-meal and then comparing the weight of ingested fat with that of the fat thrown off in the faeces. He found that the assimilation of fats was enormously diminished, particularly before the operation, from a lack of bile, and that it was still so, although in a lesser degree, some time after the operation, on account of the pancreatic insufficiency which yet remained. According to Chauffard, this symptom will corroborate a diagnosis based on the functional signs.

Hypertrophy of the gall-bladder following compression of the choledochus by a cancer of the head of the pancreas, or a partial occlusion of this duct by a cancer of the bile-ducts, may cause one to consider the possibility of a hydatid cyst with icterus, but in the former case the progress of the affection is much more rapid than in the latter. Patients afflicted with this lesion offer a very rapid cachexia and weaken visibly in a short time. Then the icterus is much darker than in the case of a hydatid cyst, and the liver and spleen are not usually hypertrophied to any appreciable degree in cancer of the pancreas compressing the choledochus; also, in cancer of the biliary tract, there is the characteristic lobulated liver.

There now remains for us to speak of a disease that may be classed with lesions of the biliary tract and which must be differentiated from a cyst of the liver. I refer to pylephlebitis, a rare disease, but which is met with from time to time and which, on account of the rather indefinite character of its symptomatology, often remains misunderstood. If one is dealing with an aseptic hydatid cyst, the diagnosis becomes intermingled with that of adhesive pyle-

phlebitis, while if, on the contrary, the cyst is infected, suppurating pylephlebitis may readily be considered.

Adhesive pylephlebitis, in the beginning, has the slow, chronic evolution of hydatid cysts: pain is not marked, there is icterus, and the spleen is usually very large, but it is to be distinguished by a nearly constant symptom, namely, ascites. Pylephlebitis is almost always accompanied with an extreme degree of ascites, which appears with great rapidity. After paracentesis the peritoneal collection recurs within a day or two in greater amount than before tapping. And, lastly, a collateral venous circulation appears on the abdominal wall, an evidence of portal obstruction.

Besides these symptoms of suppurating pylephlebitis, there are painful paroxysms with elevation of the temperature, dyspnea, profuse sweating, and an enlarged and painful liver. The general condition is bad and the evolution rapid.

We now come to the consideration of the diagnosis of enlargement of the liver and hydatid cysts accompanied by icterus. Let us just do away with the easy diagnoses in order to consider the more difficult in greater detail.

The large infectious liver is easily diagnosticated. The hypertrophy of the liver in pyemic patients is accompanied with the general symptoms of systemic infection, while the point of infection, the primary factor of the process, will be evident.

The diagnosis with hepatic abscess is generally an easy matter, but in some instances of late chronic abscess the same cannot be said. Here we have a slightly painful enlarged liver with icterus and dyspeptic disturbances. There need not of necessity be fever. These patients have usually lived in the tropics. A diagnosis by ordinary means is hardly possible, because in the absence of a rise in temperature simple palpation is not enough to indicate the nature of the tumor in most cases.

Fatty hypertrophy of the liver gives rise only to dyspeptic disturbances and not to hepatic insufficiency in fat subjects otherwise in good health.

Syphilis of the liver is readily distinguished from a cyst on account of its special aspect. The liver is usually small and the hypertrophy is merely temporary. Usually there is no icterus, but ascites is marked—two signs which distinguish it from hydatid cyst.

In hepatic tuberculosis there is hypertrophy, but not to any great degree, which, in the acute types, gives rise to pain in the right hypochondrium, sometimes to distention and ascites. But signs of hepatic insufficiency are very evident, with icterus and hemorrhage. The functional symptoms, excepting those of hepatic insufficiency, are mild in the subacute and chronic cases, for which reason they are more difficult to differentiate from cysts of the liver. However, all these symptoms occurring in cases of advanced tuberculosis with distinct signs of pulmonary lesions and often with tuberculous lesions in other organs make the diagnosis of tuberculous hepatitis an easy matter in most instances.

It is usually the same in cancer of the liver. However, two conditions are to be distinguished, according to whether the cancer is secondary or primary. Secondary hepatic cancer, the most frequent, is also the easiest to differentiate from cyst of the liver on account of the nodular surface which can be made out by palpation.

Then the ascites, which is often present, and the woody hardness of the hypertrophied organ leave no doubt. If the cancer has a gastric origin the symptoms will aid in making the diagnosis. In primary hepatic cancer the somewhat different symptoms contribute to a mistake in diagnosis. Here the surface of the organ is smooth, regular, and painless. It is accompanied by all the symptoms of hepatic insufficiency, and the woody hardness and rapid cachexia are the only diagnostic elements to go by, while, for one cause or another, should they be concealed, as for example by a little ascites or oedema of the abdominal wall, or the malignant infiltration not having reached the part of the liver accessible to palpation, then we again fall into uncertainty.

We now come to the lesion which certainly from the clinical standpoint resembles more nearly hydatid cyst with icterus. I refer to hypertrophic biliary cirrhosis or Hanot's cirrhosis. Like cysts, this process has a slow and progressive beginning; the symptoms appear slowly and progressively. Hypertrophy of the liver first takes place, this being followed by icterus. The organ is large, this being particularly noticeable in the right hypochondrium. It is hard to the touch, but the surface is very smooth and absolutely painless. As is seen from this description, there is an absolute resemblance to cysts of the liver, and it has been said that alone the icterus could cause

a distinction between the two processes. But, since some hydatid cysts can give rise to jaundice, this diagnostic point is not of certain value; and, what is more, in both, the jaundice is not always accompanied by decoloration of the faeces. Hypertrophy of the spleen is met with in both processes, and the only really distinctive point is that in Hanot's cirrhosis there are painful paroxysms which accompany an increase of the icterus. But these paroxysms may be wanting or pass by unnoticed, and they may also be present in hydatid cyst when a perihepatitis arises.

As a conclusion it may be said that, although one can distinguish hydatid cysts of the liver from other lesions of the right hypochondrium, this diagnosis is difficult in many instances and impossible in some, as, for example, Hanot's cirrhosis.

REPORT OF A CASE OF ECHINOCOCCUS CYST IN THE LIVER, GALL-BLADDER, AND STOMACH

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Surgeon and Pathologist to the Hospital Notre Dame de Lourdes

THE *Tænia echinococcus*, commonly known as the tapeworm of the dog, is comparatively rare in this country. It is for this reason that I briefly review the subject matter and report an interesting case.

The echinococcus produces cystic disease in a human being, due to the larval form of the organism; however, the full-formed *tænia* is not found in man, who acts merely as the intermediate host. This disease is quite prevalent in Iceland, where it is stated that one person in every seven becomes infected. We know that the dog is the true host, for the fully-formed *tænia*, and the close relationship between the dog and man in Iceland would easily account for its prevalence at high percentage. Sheep are also a natural host for the developed *tænia*, and statistics show us that the shepherds of Australia are very often infected through their close relationship with their herds. In all, less than one hundred cases have been reported in the United States.

While it is true that the parasite may find lodgement in any part of the body of man, yet the relative frequency of involvement of the liver as compared with that of all other parts of the body is great. According to Davaine, the liver alone is involved in one hundred and sixty-six out of three hundred and seventy-six cases. Böcker gives even a higher percentage, recording twenty-seven cases of the liver out of forty cases. Neisser collected nine hundred cases and found the liver only involved in four hundred and fifty-one instances in this series.

Eating the mutton of infected sheep may be one means of entrance into the human body. Whatever the frequency of special conveyal material, the ovum enter the intestinal tract of man through drinking

water and food or possibly as the result of handling or being licked by an infected animal. The ovum is contained within a capsule which becomes digested in the stomach and the embryo is liberated. After liberation the ovum burrows its way into the gastric wall or intestinal mucosa, and enters the venous draining channels of digestion, and is conveyed through the vena portæ of the liver. Infection elsewhere is generally secondary to the primary growth in the liver. Its presence in human tissues causes inflammatory changes which result in the encapsulation by connective tissue; then the cystic wall consists of two layers, an outer laminated layer or capsule and an inner granular or germinal layer. This cystic formation may be unilocular, but, in the majority of cases, is multilocular. The single cysts may vary in size from that of a pin-head to a goose egg, or, at times, even to a much larger size. The single cysts are not joined one to the other, but rather lie as so many eggs in a huge nest. The fluid in these cysts is clear and colorless, unless secondary infection has already taken place. This fluid contains a ptomaine poisonous in its effects, and may cause convulsions, accelerated pulse and respiration, mydriasis, and collapse. Within the cysts the scolices may become detached and lie free in the fluid of the brood capsule. So long as secondary infection remains absent the symptoms and signs of the presence of the cyst are inconspicuous until the formation becomes so large that it projects and causes apparent tumefaction.

Diagnosis, therefore, is not made in the majority of instances until a palpable cystic enlargement of the liver is detected. Even then the condition must be differentiated from carcinoma of the liver, from tropical abscess, empyema thoracis, subphrenic abscess, and from gummatous growths (luetic) of the liver. The latter are certainly more common in this country than the echinococcus cyst.

The treatment is always surgical. Incision is made and dissection completed down to the germinal sac or capsule of fibrous tissue. When the surrounding structures have been thoroughly protected by gauze sponges an incision is made by a small opening or tapped with a fine trocar. The sac contents are then antisepticized with one per cent. formalin or with full-strength tincture of iodine. After eight or ten minutes have elapsed, the capsule is emptied of its contents. The empty sac is again thoroughly rinsed, then it is dried and sutured to the abdominal wall at the point of entrance and drainage permitted

for from two to four days. The old method of marsupialization is obsolete, as the result, even with extreme caution, is not always satisfactory.

CASE REPORT

The writer reports the following case for two reasons: First, because only three cases in which the stomach was involved have been reported in this country; then, because the multiple cystic formation was unique. This case yielded at least two hundred perfectly-formed cysts, varying from the size of a pin-head to that of a hen's egg, and the fluid in many of the larger cysts contained in hooklets of the organism.

HISTORY

Mrs. G., age twenty-seven. Greek. Three years' residence in the United States.

Family History.—Unimportant.

Past History.—She has always been well and strong. She had three children, the oldest five years of age, the youngest eighteen months; the deliveries were normal, and the labor was not protracted. *Habits:* Tea and coffee daily. Venereal disease denied.

P. I.—One year ago she began to feel a dull, heavy sensation in the right hypochondriac region. Since that time she has noticed that her clothing has become tight about this portion of her trunk. She had consulted several doctors without any relief. During the previous six months she had lost ten pounds in weight. January 24, 1915, she came to my office, complaining only of the bunch under the costal margin in her right side.

P. E., F. W. D. P. N.—Swarthy; Eastern complexion; head, ears, nose, throat, eyes, heart and lungs negative; abdomen, no glands or ascites; stomach, normal size; transverse colon not distended; sigmoid filled with fecal material; spleen not felt; no floating kidneys. *Liver:* Inspection of the right hypochondriac and right half of the epigastric region showed a marked prominence. This tumefaction was oval in shape and regular in contour. Deep inspiration allowed free downward excursion of this mass as a whole. *Palpation:* A large, oval, regular mass, extending below the flaring edge of the ribs, could easily be felt in the right hypochondriac region. This mass seemed to move downward with inspiratory excursion and recede during the expiratory excursion. There was no marked tenderness over this area. *Percussion:* The upper border of the absolute area of hepatic dulness was in the fourth interspace, anterior-axillary line. At the lower border, which showed complete flatness, the limit was reached at a point one and a half inches below the costal margin at the anterior-axillary line.

Temperature, 101° at 2 P.M.; pulse, 88; respiration, 18; no tremors noticeable.

Diagnosis.—Sub-diaphragmatic abscess possible; hydronephrosis, right kidney possible; malignancy of liver possible.*

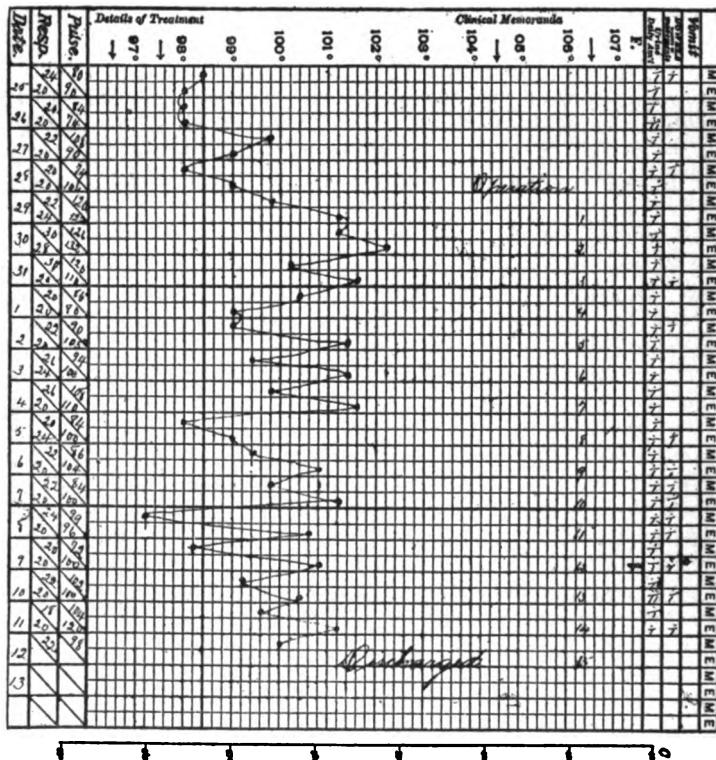
* I advised removal to Notre Dame Hospital for observation and in order to operate later, if it were thought wise. Accordingly she entered the hospital.

Laboratory observations showed blood examination: Haemoglobin, 70 per cent. Differential count: Polymorphonuclears, 65 per cent.; S. M., 22 per cent.; L. M., 11 per cent.; eosinophiles, 2 per cent.

Urinalysis.—Early morning specimen was clear and showed normal color; reaction, acid; specific gravity, 1025, no sugar or albumin; hydronephrosis was thereby ruled out.

Differential Diagnosis.—Hydronephrosis was ruled out by the result of urinalysis; malignancy was only faintly entertained because cachexia or icterus

FIG. 1.

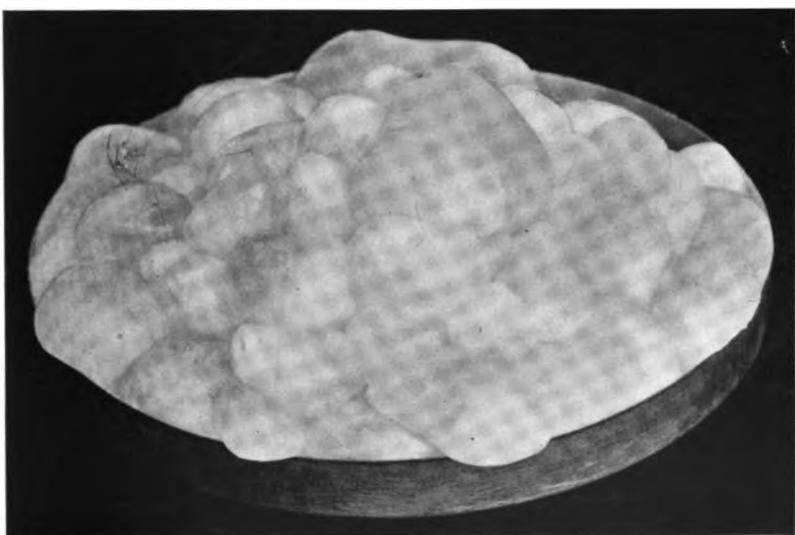


Clinical chart showing accelerated temperature, pulse, and respirations due to the toxic absorption very typical of these cases. Chart showings cover the two postoperative weeks only.

was not present and no glands were involved. Subdiaphragmatic abscess was considered the most likely condition. The accompanying chart will show that the temperature supported the idea of a toxæmia from some source.

Ultimate Diagnosis.—Subdiaphragmatic abscess. When I had explained that an incision would be partially exploratory, I advised an operation, and obtained the patient's consent. A right rectus incision extending from the costal margin to the level of the umbilicus was made. Immediately there was seen through this incision a large, oval mass, about the size of the head of an adult, vibrating with the respiratory excursion. The general abdominal cavity was

FIG. 2.



This near-focus photograph allows close inspection. The various shapes and sizes of the cysts are plainly seen. They closely resemble eggs in a basket.

carefully walled off with gauze protectors. The hand was then introduced, and this mass was found firmly attached to the superior and a part of the posterior surface of the liver. It also surrounded the gall-bladder, which was atrophied and collapsed and involved the pyloric end of the stomach. This mass was firmly adherent to these structures and could not be freed. Therefore a large trocar was introduced, but no result was obtained. This was then withdrawn and the opening enlarged. Immediately there sprang forth a great many soft-shelled cysts, varying in size from the size of a pea to that of a hen's egg. By gentle pressure the voluminous outpour was continued until the shell was completely emptied and two hundred of these soft-shelled cysts had been delivered (see Fig. 2). After completely emptying this large, thick, fibro-elastic shell it was carefully swept with gauze to reach all crevices. Then it was filled with full-strength tincture of iodine, which was allowed to stand three minutes, and then it was taken up with gauze. This shell was stitched to the edges of the incision when the packing had been removed from all areas. A large drain of rolled gauze was left in the shell and the incision partially closed up. The final diagnosis was echinococcus cysts involving liver, gall-bladder, and stomach.

The patient made an uneventful recovery with the typical post-operative toxæmia charts of this class of cases (See Fig. 1). Drainage was continued for the first four postoperative days only; then the aperture closed at will. She returned home at the end of four weeks, as the wound had healed perfectly. Since the operation she is gaining in weight, has perfect digestion, and enjoys life normally.

The writer feels that this was certainly a very unique and instructive case. In view of the fact that perusal of the literature on the subject reveals but three cases involving the stomach, the study of the condition and thought along this line are warranted. The findings in this instance compel us to be on the watch for an echinococcus cyst even in these organs, and to consider it in the differential diagnosis of tumors, in this area.

Pædiatrics

OBSERVATIONS ON THE PHYSICAL TREATMENT OF THE DISEASES OF CHILDHOOD¹

BY WILLIAM BENHAM SNOW, M.D.

THE treatment of deranged conditions of childhood requires in each instance the knowledge of any idiosyncrasy or irregularity of habit that may have caused the trouble, and then a knowledge, on the part of the attendant, of the means that will correct it. For this the written prescription for drugs, except possibly castor oil, is of least importance, and the régime to be established will often tax the physician's skill to the utmost.

While it is true that children are born with certain predispositions, it must be conceded that with judicious management, hygienic and eugenic, such children will, in most cases, develop into healthy men and women. The tendencies of life, particularly of urban life, are away from the natural. They are often pampered with pleasures and indulgences, and forced mental training, which tend to unbalance the body's forces and functions, while stimulating the passions and unnatural impressions of the youth, conditions which tend to incapacitate them for life's battles.

The management of childhood should be, in the main, prophylactic, with a judiciously regulated diet and systematic exercise in the open air from infancy. In other words, a proper balance of diet and exercise should be adopted which will develop a healthy organism. Indulgence in the use of foods which are not properly constituted to meet the demands of physical life is the most common cause of ill-health in childhood. It is thus evident that the therapeutic management, when consequent disturbances arise, must look first to the correction of the faulty habits that have caused them, and the establish-

¹ Read before the New England Electro-Therapeutic Association, April, 27, 1915.

ment of a rational régime, together with the employment of other measures to meet the indications which present.

No natural laws should be habitually violated, and the child should be taught that every part of his body has a function to perform —his teeth, stomach, alimentary canal, and the others. The importance of regular habits, with times for eating and defecation, as well as the importance of routine exercise, should be impressed upon the youth.

There are other conditions, for which the child is not to blame, which should also be corrected. The disposition to force young children into school, where they must spend hours in confinement, is not consistent, except under circumstances of poverty, with bad hygiene in the home. Education, while important, is far less important than health.

The physical measures to which we look for the reëstablishment of a healthy organism are: (1) Regulated diet and exercise; (2) healthy environment with plenty of fresh air; (3) radiant light and heat; (4) the forms of electricity, (5) mechanical vibration, and other mechanical measures as indicated to quicken and energize functions which have become deranged, sluggish or impaired, together with the correction of unnatural habits, including those of poise and posture.

Watch the youngsters going to and from school, burdened with loads of books altogether too heavy for the young bodies to carry, unbalancing their spines by a one-sided load, and we have an explanation for many lateral curvatures. And this is not the most deplorable indication, either; for these books are being taken to be studied for hours after the child has spent his day in school, in order, possibly, that some teacher may record a better advancement of her class, or because the educational authorities demand it. It is all wrong; better far a sound body than a head crammed with knowledge, much of which will never be made of practical value, either in a profession, for mental discipline, or in life's career.

Modern tendencies are enervating and should be corrected. Educators seem now often to disregard the health and future needs of the student in laying out curricula for cramming them with ancient history, dead languages, psychology, and higher mathematics, subjects which will be of use only to these who in later life follow the

vocation of educators or phases of professional life in which they are required.

We would not disparage education, but urge a regulation to the training of the mind to the useful arts, and the teaching of the practical things which are certain to be useful in after-life.

Educators are also often reckless in their tendencies to hold the youth to the requirements which only look to the mental training, often not giving proper attention to the physical development of childhood and youth. Or, instead, they are put to extreme tests of physical exercise and strength in the gymnasium for competitive college athletics, extremes of training which are not beneficial. The young men who work on the football or the rowing teams may develop great muscles and physical strength and tastes detrimental to their moral and physical health. I do not wish to be considered to be too marked a pessimist in these matters, but the futures of many young men to-day are ruined by college environment and associations. It is not the name of a great university that means so much for the future health and manhood of our sons as the life habits and principles that are there inculcated. The founding of youth in these matters cannot be left to the careless oversight of disinterested educators, whose principal aim may be to maintain the standard of a university in athletics and education more than to turn out youths who shall be self-respecting and self-supporting. The management of the health of the youth should look first to the proper balance of the physical and mental and avoid extremes in either direction. "*Mens sana in corpore sano.*"

If the secretions are normal and the functions of alimentation and defecation are regular and adequate, with systematic exercise in the open these habits will establish a healthy development.

The first principle in the treatment of the diseases of childhood is the correction of perversions and vicious habits. Conditions that arise under the errors of habit and environment are various cachectic conditions which include epilepsy, chorea, and various other toxic conditions, as the various forms of arthritis, cardiac and kidney affections, and, in rare instances, Graves's disease, all of which, when taken in their earlier stages, can be readily cured by some combination of physical treatment associated with the establishment of a correct dietetic régime.

Special methods of treatment for the relief of conditions which

present should be directed to their correction and will vary with the conditions. I have found, in the investigation of the various toxic conditions, that in most of the cases the child will be found with a degree of hypertension due to the toxæmia.

Under twelve years of age a child's blood-pressure should not exceed 85 millimetres of mercury, but we often find these little sufferers with pressures running from 110 to 130 millimetres. In most cases of chorea, epilepsy, and cardiac insufficiency which has arisen from infectious endocarditis, and also in conditions of arthritis and nephritis, the blood-pressure will, in youth as in mature life, forecast a pending crisis or the development of some serious affection. Observations should, therefore, always be made in order to anticipate an onset.

Nephritis, endocarditis, pericarditis, the forms of arthritis, epilepsy, chorea, and Graves's disease may all be attributed primarily to a deranged condition of the alimentary tract, with constipation, varying degrees of indigestion, and conditions of atony arising, primarily or secondarily, from alimentary disturbances. The indication in all of these cases is practically the same, as follows: (1) The correction of diet, with the elimination, at first, of all foods which tend to undergo rapid putrefaction in the alimentary canal, which is particularly true of animal foods; (2) correction of constipation and a restoration to normal of the functions of the liver, chief of which is to render harmless seventy-five per cent. of the toxic poisons in the circulation; and (3) the indicated treatment of the symptom-complex.

In no case, however, should we lapse into the notion that the alimentary tract is the only source of infection. The teeth, tonsils, or any to-be-discovered foci of local infection may be the source of the toxic trouble. In most cases, however, the original source will be found to be the alimentary canal.

Constipation in childhood, as in adult life, is one of the banes of the therapeutics of drugs; but in no class of patients can this condition be so easily and promptly corrected as by physical measures, directed to the restoration to activity of the functions of the liver, intestinal glands, and the muscles, together with the institution of a judicious diet.

No measure will be found to be of greater benefit for the relief of intestinal stasis or sluggish motility of the alimentary tract during

childhood, before ptosis or other organic derangements have occurred, than radiant light and heat applied from a high-candle-power incandescent lamp over the abdomen for a considerable period daily. This, together with the application of the static wave current over the abdomen, or the sinusoidal current applied with one electrode placed over the back and the other over the abdomen, will quicken and arouse to activity the intestinal tract in all cases in which adhesions are not present. Radiant light and heat can be used in all cases, and in infancy and early childhood will often, by the induction of hyperæmia, be all that is required to arouse the functions to normal and relieve the constipation. In the more stubborn cases it will be necessary to resort to electrical currents. Then it may be that some will do better with the static wave current over the liver and abdomen and others with the sinusoidal current. In the writer's experience the static wave current has always proved efficacious in the constipation of childhood.

Diet should always consist of easily-digested food, with sufficient bulk consumed in the form of non-nutritious foods, as salads, string beans, spinach, fruit and similar articles of food, together with a balanced diet which will meet the physical demands of the little patient. Milk, a judicious use of eggs, cereals, fruit, and nutritious vegetables, judiciously selected and regulated to the individual patient, will be all that will be required to set up a healthy alimentation and reëstablish nutrition even in weak and debilitated patients.

In nephritis, which in childhood is uniformly of the parenchymatous type, the application of the static wave current over the kidneys and daily light baths, together with the employment of a properly-regulated diet, will usually correct the error in these cases. These patients will uniformly be found to have hypertension which is compensatory, and therefore to lower the pressure would be a serious and fatal error. This symptom, however, will rapidly disappear in the course of treatment.

Cardiac valvular insufficiency associated, as it will be often found to be, with a high blood-pressure is a serious and distressing condition. The endocarditis and hypertension may arise from the same toxic poison, which may persist after the active endocarditis has ceased, the incompetence of the valves remaining. The writer has seen several

such cases in these little sufferers, invariably with hypertension and the heart working at a disadvantage. The following case report well illustrates this condition of things:

J. J., nine years of age, male, Italian birth. Examination disclosed the tricuspid, mitral and aortic valves incompetent, and the child was suffering with marked dyspnoea, with a complicating blood-pressure of 130 millimetres. Under the judicious use of the static wave current over the liver and abdomen and mechanical vibration between the processes of the seventh cervical and first dorsal vertebrae for two minutes daily, and a correction of diet and relief from constipation, the blood-pressure of this child, in a few weeks, was reduced 45 millimetres, with almost an entire disappearance of the cardiac murmurs, which had been accentuated by the arterial resistance. A marked change in the action of the heart was discernible. This child had been extremely fond of meat and had been indulged. He was a voracious eater and permitted to eat at any time between meals, of which he took advantage. The diet was, at the outset, regulated to three rational meals each day. Most of the meat was denied, and within a few weeks he had regained nine pounds, his arterial tension remained normal, and he was generally improved. This case illustrates the importance of regulation of diet and the value of rational treatment in valvular incompetency, and also emphasizes the fact that the blood-pressure should be observed in children as well as in the adult.

Dr. Arnold Snow has made the following observation. In case of valvular trouble associated with high blood-pressure she states that "mechanical vibration applied in the intervertebral spaces between the seventh cervical and the first dorsal vertebrae alternately on each side for two minutes, with a hard ball vibratode, will not only mitigate the valvular disturbance, but lower the blood-pressure. The pressure employed during the vibratory application should be rather moderate, but with the ball closely applied."

In young adults a blood-pressure running above 100 millimetres of mercury—full pulse—should be considered abnormal, and toxic conditions suspected and corrected, thereby anticipating what is certain to ultimately terminate in a condition of marked hypertension and other toxic affections early in life.

Chorea is another condition of toxic origin. It has been found universally in the writer's cases that improper conditions of diet, environment, and habit were in all, of the character that is associated with toxæmia. The first indication, therefore, in the treatment of these patients is the correction of the diet, and treatment of the usual constipation and inert liver functions, together with the application of electricity to the spinal column and radiant light and heat to the trunk, front and back. The diet in these cases is as previously sug-

gested—meat-free, moderate and nutritious—and removal of all sources of irritation, with out-of-door life as much as possible, and treatment directed to the reëstablishment of proper elimination.

In violent cases the writer has found that cold packs at night and the application of radiant light and heat, and the static current applied with a long spinal electrode by the method of static insulation, are capable of restoring these little sufferers to a healthy condition usually within a few weeks, the improvement beginning almost spontaneously with the institution of treatment.

It was first shown by Apostale that the application of the static current in chorea was particularly efficacious, but in no instance should any stimulating application be employed, as of sparks or modalities, which give shocks to the tissues. For this same reason the wave current is not administered in chorea as it is in most other spinal cord affections until it can be employed without inducing muscular spasmodyc reflex effects. The prolonged application of radiant light and heat to the trunk produces an active hyperæmia in the skin, which acts as a derivative and draws away an excess of blood from other parts, as from the cord, which is undoubtedly hyperæmic in these cases.

The cold pack acts in the same way, and, if the child's reaction is such that he promptly recovers from the chill, the effect is very beneficial; otherwise a hot pack is of more value, together with more frequent applications of radiant light and heat. The aim is always to reëstablish a normal metabolism throughout the proper channels and to promote the elimination of toxic waste. Under these conditions health is restored in an incredibly short time.

Epilepsy is a functional disease in a large majority of cases, the cases of central origin being relatively few. This being the case, the condition should be cured soon after the first occurrence of paroxysms with practically the same routine that is carried out in the treatment of chorea, with the additional routine application of the static wave current over the liver, which is also indicated in chorea after the reflex excitability is sufficiently allayed with a view to increasing its capacity to destroy the toxic poisons in the circulation.

The following case will illustrate the routine and outcome of a rational treatment, as well as indicating the method employed:

P. F., eight years of age, the son of a butcher, referred to the writer by Dr. J. J. Benson, came with the history of having had recurrent attacks of fits during the preceding year which were becoming more frequent. The child gave a history of having been a large consumer of meat for a child of his age, attending school and having comparatively little exercise in the open. The child was at once put upon a meat-free diet and the diet otherwise regulated. He was taken from school and kept in the open air as much as possible, even during the cold weather. His treatment was given six days weekly for the first two weeks, which consisted of long administrations of radiant light and heat over the front and back of the body, with the application of the static wave current over the liver. Under this régime the child ceased to have his attacks, and at the end of two months was cured, and the fits have not recurred since five years.

This case illustrates the usual effect of overindulgence in animal food and the need of requisite attention to the habits of living and environment in childhood.

Infectious arthritis may be of various types, either the so-called rheumatic condition with the acute onset which is a general arthritis, with swollen and painful joints and considerable temperature, often complicated by endocarditis or other toxic effects. In these cases a thorough evacuation of the alimentary canal and the adoption of an absolutely purin-free diet are indicated, together with the employment of means which will promote elimination, including the methods previously described—radiant light and heat, light baths, or dry hot-air baths—and the treatment of the local conditions, unless other foci of infection are the direct cause, as infected tonsils, carious teeth, or other local foci. Relief of the condition with these measures is usually prompt and effective. The fact that such a condition has occurred once is sufficient warning for the correction of the future life to prevent recurrence.

Still's disease, another form of arthritis, once known as rheumatoid arthritis in children, but characterized, as shown by Still, by the presence of an enlarged spleen, is very promptly amenable to physical treatment. One case which ten years ago came under the author's observation was promptly cured by the application of the static wave current to the swollen and inflamed joints without special attention to diet and under conditions with which such a régime would have been impossible, owing to the environment of the patient. This child, after six weeks' treatment, was entirely relieved, the pains being relieved within one week, and has never had a relapse, and is now a well-developed young woman, fifteen years of age. This case had

been under observation and treatment at the New York Hospital for Ruptured and Crippled for more than a year, getting constantly worse with treatment by rest and plaster casts, and was referred to me by the orthopaedic surgeon in charge. The value of the static current in relieving infiltration and also in restoring the general metabolism in a case so stubborn would indicate its beneficial effects.

Sprains, contusions, and bruises in childhood are always amenable to treatment by the static current, either the static wave current, static sparks, or static brush discharge, singly or in combination as indicated, such affections being promptly cured when fracture has not occurred.

Graves's disease is of rare occurrence in young children, and yet during the past year I have had under observation a child, seven and a half years of age, with a marked condition of ophthalmia, tachycardia, and the characteristic symptoms of malnutrition of this affection. This child was made normal in five months by alternate exposures of the thyroid and thymus glands to the X-ray, the static wave current to the thyroid gland, and radiant light and heat to the abdomen, together with a judicious regulation of diet. In this case the ophthalmia is gradually disappearing, which is not a usual occurrence following the treatment of this condition in adults.

Many of the infectious conditions in childhood often arise from defective conditions of the alimentary tract, either by lowering the resistance of the patient or by the dissemination of the germs of infection which are taken up and conveyed in the blood throughout the tissues. The same general principles of the treatment of infectious conditions obtain in children as in adults: the employment of the X-ray for pyogenic and tubercular processes, making long exposures, and followed subsequently with shorter exposures on alternate days until the destruction of the germs is effected, and then to follow with the use of radiant light and heat and the static current for the dissipation of the infiltration and exudation which may have been left by the infection. This plan of treatment applies to the treatment of tubercular adenitis, boils, furuncles, and other local infection.

The treatment of colds in the head and chest in childhood can be promptly cured as in adults by long—one-hour—applications of radiant light and heat. It is notable how promptly a cold in the head in a child or an adult can be relieved by suspending a fifty-candle-

power lamp as near as can be tolerated over the face, covering the eyes with pledges of moistened cotton. Such applications are effective in ninety per cent. of the cases either of sinus disease, colds, or otitis media.

To Dr. Herbert F. Pitcher we owe the establishment of this method in the treatment of otitis media and mastoiditis, a measure which has proved uniformly effective in the writer's experience and in the experience of many others who have followed his suggestion.

To Dr. Arnold Snow is due, we believe, the discovery of the successful treatment of catarrhal colds and erysipelas by the prolonged use of radiant light and heat. This is applicable also to the treatment of catarrhal inflammation of the throat and chest.

Radiant light and heat applied for an hour at a time twice daily in cases of pneumonia or bronchitis is a most effective means of hastening resolution or aborting an attack, besides affording great relief to the patient. This is accomplished by establishing hyperæmia and more rapid circulation throughout the parts, and at the same time has undoubtedly a detrimental effect upon the germs present.

Poliomyelitis, now included in the category of infectious diseases, is one condition in the treatment of which physical treatment plays a most important rôle, though, we regret to say, this is not appreciated or acknowledged by the neurologists. The very first days when the symptoms are suspicious of a pending poliomyelitis, before any paralysis has occurred, and on the first days when the paralytic symptoms appear, long exposures front and back to radiant light and heat, particularly over the spine, are instrumental in drawing the blood to the periphery and at the same time increasing the local resistance in the spinal cord. It must be borne in mind that radiant light and heat penetrates several inches into the tissues and, wherever the radiations penetrate, produces hyperæmia. It is for this reason that this important measure proves so efficacious in so many conditions of infection.

When the paralysis has appeared, together with the use of radiant light the application of the static wave current with a long spinal electrode extending from the cervical to the sacral region, employing a spark-gap of eight to twelve inches, will effect the drainage of the infiltrated tissues surrounding the cord through the lymph-channels and positively relieve the local pressure which is the cause of cord

degeneration and paralysis. The writer has demonstrated this in so many cases that he feels justified in affirming it, and it is a matter of regret that the fact can not be brought in a convincing manner before neurologists and those who now stand to promote or prevent its general adoption.

The present tendency is for these children to be put in quarantine for varying lengths of time, under conditions which make this treatment impossible until a degree of impairment or destruction of the cells of the cord has taken place which will preclude the possibility of the cure ever being made complete.

After the first few weeks of treatment with light and static electric administrations the muscles that do not fully recover power may be to a degree improved by the employment of the galvanic sinusoidal current, placing one electrode over the corresponding region of the cord and administering, with a slow interruption, the current to the motor points of the impaired muscles. This, with the use of massage or mechanical vibration and radiant light and heat to the atrophied muscles, will do very much towards improving them.

This current, likewise, in cases of long standing will often prove very beneficial. The sinusoidal current is superior to the induced current or the labial application of the constant current in the treatment of these cases. It has been shown from experience that persistence of treatment of the paralyzed muscles often results, even in apparently hopeless cases, in restoring in a large measure, or completely, the usefulness of affected parts. In a paper read before the American Electro-Therapeutic Association by Dr. Brower, one-time president of that association, he affirmed that he believed that "there are in the same group neurons that are undeveloped, that can be developed, and will aid in producing muscular contraction for neurons that have been entirely destroyed, making it possible often to restore cases years after the onset of the paralysis."² The serum treatment of infantile paralysis will probably never play a very important part in the treatment of these cases, because when paralysis occurs it is too late for serum to accomplish any results.

The subject of the treatment of poliomyelitis is still an open question, and it will take some time to finally determine how these

² *Advanced Therapeutics*, Nov., 1904, pp. 635-647.

cases shall be best treated in the future. We are certain, however, that the ultimate conclusion will place the employment of the static current, radiant light and heat, and the sinusoidal current in first places for the relief of these unfortunate little sufferers.

The exanthematos conditions of childhood can all be greatly benefited by the employment of physical measures, particularly by radiant light and the Röntgen ray. Success has already been reported from the use of the Röntgen ray in mumps and whooping-cough, and there is probably no agent that will help to promote the desquamation and elimination of the poisons of scarlatina and measles other than prolonged applications of radiant light to the surface of the whole body. It is contra-indicated in the treatment of smallpox, however, as favoring the scarring, whereas the luminous rays are materially beneficial in the other skin eruptions. In smallpox Finsen discovered that a patient kept in a room lighted only by the orange and red rays was not so scarred by the pustular eruption as those kept in the daylight. It was later discovered, however, that in a dark room the same result was obtained, indicating that the luminous rays favored pustular scarring.

Experience has established the fact that physical therapeutics in the treatment of diseases in childhood as well as in adults fills one of the most important rôles in medical practice. It is the missing link between surgery and drug therapy which must be recognized and adopted by the medical profession. It will at once offset the tendency of the laymen to fall into the hands of the cults. What Osler has said concerning drugs, and what experience has taught both physicians and laymen, have so prejudiced the lay mind against the too often unsuccessful drug therapy that patients are no longer satisfied unless something is actually done in addition to drug administrations for the relief of diseased conditions. Physical measures appeal to the layman as they do to the physician who gives it a thought, because it enables the physician to accomplish with great success the management of many conditions which have not been successfully treated in the past.

PYELOCYSTITIS AND ACUTE NEPHRITIS IN THE YOUNG

BY FLOYD B. RILEY, M.D.
Chicago

ALTHOUGH inflammation of the kidney and urinary tract, with formation of pus, has been recognized and observed frequently and for a very long time in adults, particularly old men, it is only comparatively recent that the so-called spontaneous infections of the urinary tract in infancy and childhood have been especially studied. As late as 1902 well-known text-books of Pathology make no reference to the pyelocystitis of childhood. Thompson,¹ Mellin,² Hartwig,³ Zahorski,⁴ Langenstein,⁵ Fischer,⁶ Box,⁷ Escherich, Trumpp, Finkelstein, and others have helped to advance our knowledge of pyelocystitis of infants in recent years.

Inflammation of the renal pelvis in children is associated most frequently with fine uric acid sand which lies first in the kidney parenchyma and then passes out into the pelvis and down the urinary tract, acting as a local irritant. In the majority of cases of pyelocystitis in the babies which come to autopsy in the Children's Memorial Hospital fine brown uric sand is found in some part of the urinary tract and no doubt serves as the local basis for the infection which is usually present. Congenital anomalies—especially hydronephrosis, tuberculosis, tumors, and large calculi—are other important local predisposing causes. Three ports of entry for the infection suggest themselves, viz.: (1) Haemogenous, (2) direct extension locally—from immediate surrounding parts (such as the colon), (3) direct extension upwards from the bladder. The latter mode of extension is considered the usual one by most authorities. The studies of Finkelstein and others directed attention to the frequent presence of

¹ Thompson, *Scoot. Med. and Surg. Journal*, 1902.

² *Jour. d. Kinderheilkunde*, 1903, No. 1.

³ *Berlin klinische Wochenschrift*, November 30, 1903.

⁴ *St. Louis Courier of Medicine*, February, 1907.

⁵ *Therap. Monatsschrift*, May, 1907.

⁶ *Archives of Pediatrics*, June, 1907.

⁷ *Lancet*, January, 1908.

Pyelonephritis and cystitis. (Museum, Children's Memorial Hospital.)

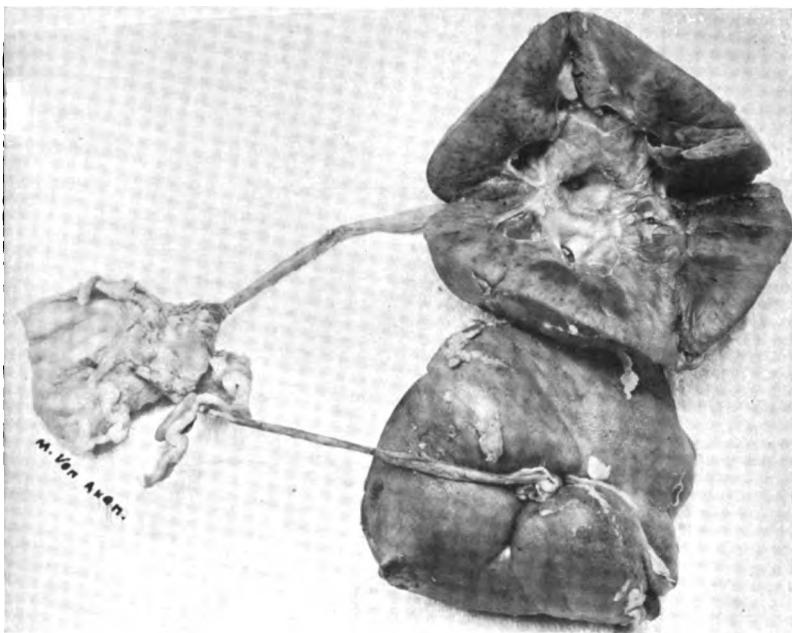


FIG. 1.

Pyelocystitis; congenital hypertrophy of ureters. (Museum, Children's Memorial Hospital.)

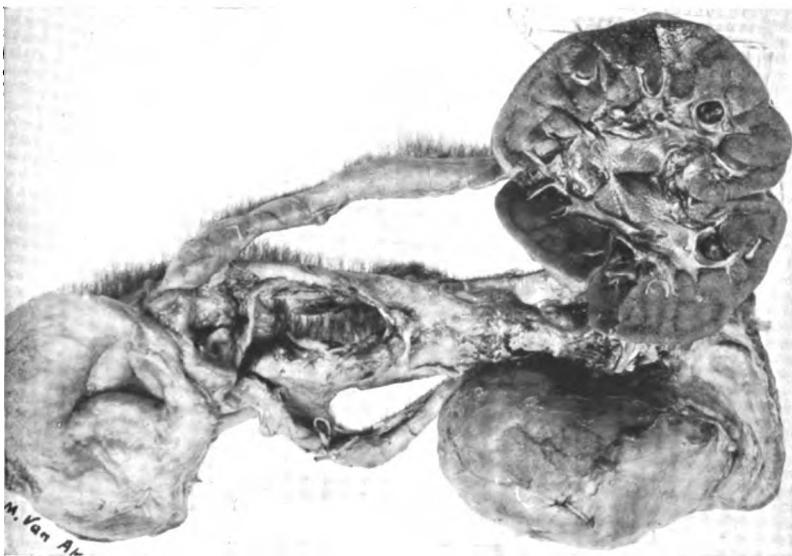


FIG. 2.

colon bacilli in the catheterized specimens of urine. The name "ciliocystitis" was given by them to the condition. It was also noted that girls were more frequently affected than boys, and the severe cases of gastro-enteritis were often accompanied by pyelocystitis from which the colon bacillus could be isolated. In this connection we have noticed that the cases of vulvovaginitis of gonorrhœal origin show no especial tendency toward the development of pyelocystitis. When gonococci are found in the smears from the meatus of the urethra and the vulva very few organisms of other kinds are found, particularly in the acute and subacute cases of vulvovaginitis. Recent work by Rosenow in which the culturing of organisms directly from the tissue instead of the body fluids is emphasized in the search for the causative microorganisms, when applied to the bacteriology of pyelocystitis, may change our ideas considerably. It is possible, after all, that the presence of colon bacilli in the urine may often be an accident and by no means the cause of the disease.

The symptoms of pyelocystitis are now quite well known. There are two main phases of the clinical course, viz.: First, well-marked general symptoms, such as fever, chills, and sweats, associated with the urinary findings, pus and urinary cells; and the other in which there are only urinary findings and a more or less obscure clinical course. In many of the cases pyelocystitis would not be diagnosed without routine urinary examinations. The significance of cells other than leucocytes is much debated. The diagnostic importance of epithelial cells is much discussed. Whether the presence of large numbers of leucocytes in acid urine, together with clinical symptoms, should be our diagnostic point for this disease, or whether we should lay more stress upon the finding of round epithelial cells which have much protoplasm and vesicular nuclei, is a point upon which the various authorities are not all agreed. If epithelial cells of either round or caudate type are found, their presence is to be regarded as strong evidence for marked inflammation of the kidney, pelvis, ureters, or bladder, singly or together. Occasionally the kidneys are enlarged and easily palpable, as in Specimen 1.

SPECIMEN 1.—From a private case of Dr. Helmholz. The child was ten months of age. The clinical course was somewhat obscure, and the diagnosis remained in doubt until the routine urinary examination was made and the uncentrifuged specimen found to contain leucocytes in great abundance. Both kidneys were large and easily palpable before death. At autopsy both kidneys

were found to be markedly enlarged, with small hemorrhages visible beneath the capsule. Both ureters were thickened and larger than normal, but the right was larger than the left. The mucosa of the bladder was swollen and thickened with reddening, particularly of the trigone. The bladder contained a small amount of cloudy yellow urine. Upon sectioning the kidneys the thickness of the cortex was found to be increased. There were numerous hemorrhages throughout the kidney substance. The calices were flattened and the capacity of the pelvis of the kidney much increased. The walls of the pelvis were reddened, thickened, swollen, and, instead of showing a smooth, pearly-gray surface, it was irregularly roughened. The anatomical diagnosis was pyelonephritis and cystitis. The gross specimen having been passed through the Kaiserlings, these changes as described are shown unusually well; also the photograph is able to reproduce them fairly well as shown. This is unusual, as many of the specimens which show evidences of pyelocystitis and nephritis clinically and at autopsy do not retain their markings after having been passed through the Kaiserlings so that they can be as easily distinguished as they were in the fresh specimen. (Fig. 1.)

SPECIMEN 2.—Taken from the collection I have brought together from the services in the hospital with the aid of Dr. Frank Churchill. We have had many autopsies upon children which showed pyelocystitis in 1913 and in 1914. Of these, but few retained their markings. This specimen is one associated with a slight amount of hydronephrosis. Each ureter was patent only to a very fine capillary probe. The pelvis of the right kidney shows thickening and redness, but the pelvis of the left does not show the changes so well marked. The bladder is thickened moderately and hyperemic, and the trigone is also markedly reddened. (Fig. 2.)

These two specimens represented very well two extreme phases of the pathology of pyelocystitis of infancy and childhood.

CASES OF ACUTE STREPTOCOCCUS HEMOLYTICUS INFECTIONS; OSTEogenesis IMPERFECTA; TUBERCULAR PERITONITIS

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CASES OF ACUTE STREPTOCOCCUS HEMOLYTICUS INFECTIONS

In this first case the trouble commenced ten weeks ago; the child has been in the hospital for seven weeks. It began with fever, headache, general malaise, vomiting, etc.,—the general symptoms of sepsis. After the onset of the fever the child began to complain of the left ankle-joint, which then became swollen, and a few days following this the left knee-joint became swollen and painful. The knee-joint was so painful that it was impossible to touch it. One week later the right leg became affected. There were very high fever, headache, all the symptoms of sepsis. The right arm and shoulder then became a little painful, but there was never any swelling, and this soon cleared up. After three weeks the child was absolutely unable to move the lower limbs. Since the onset she has been in bed.

Past History.—Has never had any attacks of tonsillitis; had an otitis media two years ago. The ears continued to discharge until the onset of this present trouble.

The family history is not particularly connected with this trouble.

The urinary examinations, as a rule, were very nearly normal; occasionally there was a little albumin present, on account of the septic irritation of the kidneys. The blood showed at different times a variable leucocyte count, from 18,000 to 26,000; von Pirquet and Wassermann negative. Temperature on entrance to hospital, 104°. X-rays showed that the joint surfaces were some distance apart; there was quite a space, and it induced us to aspirate the joint, but we got no fluid. In such cases we always examine the nose, throat, and ears thoroughly,—in fact, search for some localized infection. The tonsils were rather large, and we thought there might be pus

present, but we were unable to get pus; however, we did get pus from the ears. There was an irregular, septic temperature all along in this case, the temperature varying from one to five degrees at times. The teeth were in bad condition, and were attended to. Examination of the lower limbs showed both limbs of the same length. In the right hip there was limitation of motion in all directions. Motion limited in both knees. The left knee-joint was swollen, but there was so much pain that it was impossible to examine it thoroughly. It was more on account of the pain that there was limitation of motion than owing to the paralysis. Examination of the X-ray plates shows an erosion at the head of the bone, with dislocation of the left hip-joint. On the right side there was also erosion of the head of femur and also of the surface of the acetabulum. On the right side the patient developed quite a large abscess, which was opened, and the laboratory examination, made by Dr. Potts, under supervision of Dr. Kirk, showed a pure culture of the *Streptococcus haemolyticus*. I had a conversation with Dr. Rosenow about this, and he said he has never been able to get a pure culture of the *Streptococcus haemolyticus* in any human being. There was no question about the *Streptococcus haemolyticus* in this case.

After the pus was liberated the patient was placed in a recumbent position and kept there, with proper dressings, etc.; the temperature came down and has remained down. There is no evidence of tuberculosis. There is no question but this is a case of *Streptococcus haemolyticus* infection. The invasion was sharp and definite. The child was perfectly well before the attack. The child is very much better now. She was absolutely unable to move when brought to the hospital; we could not touch her at all. She is recovering, but will have an ankylosed joint in the left hip. This is a very rare case.

As is usually the way, we had another case at the same time. This child entered the hospital in much the same condition. She is seven years of age. The present trouble dates back to two weeks before she entered the hospital. She had a bad earache, and after five or six days the ear began to discharge and has been discharging ever since. During the nine days of otitis media the child felt good, but five days before admittance to the hospital she was suddenly taken ill with chills, vomiting, general malaise—typical evidences of sepsis. She had pain in the left hip-joint, the left knee-joint, and left elbow-

joint. This pain was intense. The joints were swollen and œdematosus. The child could not be moved at all. There were several joints implicated in this case—the left hip, the knee-joint, and the typical history of sepsis all the way through. This child, the first two or three times, did not react to the von Pirquet; on the fourth attempt she did react to it. She had a history of scarlet fever at five, followed by an otitis media; measles at six. She had a severe body burn a year ago, which took six months to heal. Tonsillectomy six months ago.

In all these cases of infection we always examine the tonsils and make it a point in all heart cases and those of so-called rheumatism to remove the tonsils if found affected in any way. We always look for a focus that might cause infection. The bacteriology of rheumatism is not so well defined as to allow us to make a diagnosis of "rheumatism." Rosenow would call it rheumatism. According to the studies of Rosenow, the streptococcus can undergo, during its retention in the body, certain transmutations, so that under certain conditions you will have muscular troubles, under other conditions you will have joint troubles, under other conditions heart troubles, and in certain conditions you will have ulcer of the stomach. Rosenow said he had never come across a case of *Streptococcus haemolyticus* infection in a human being, but he would imagine that if he ever did get an infection caused by this germ it would be a very serious affair; and that is what we had in these cases.

The first child has had this very severe infection of the joints, localized especially in the left hip-joint, with a large abscess formation, which drained thoroughly, and the child made a good recovery. But in this second case the whole abscess was in the joint itself, and it burst through the joint capsule. These cases are very rare. I have been practising medicine a good many years and have had a lot of hospital experience, but have never come across a series of cases similar to these. The last case gave a history of tuberculosis in the family, and this case would be diagnosed as one of tuberculosis of the joint from its peculiar joint findings, and it was said that it was a condition of the joint found only in tuberculosis; that it was not sepsis—from the X-ray findings in the joint. But that was not so. Nevertheless, we followed the treatment of a tubercular joint; placed the limb in a plaster cast, intending to let all acute symptoms subside.

After a few days high temperature came on, with intense pain, and we finally had to remove the cast and treat that case on the basis of sepsis. Here is the result: The child is normal. She is recovering, but the head of the bone has been destroyed. That all happened in a very short time. Infection of the joint was sharp.

There is no medical treatment in these cases. The only thing is absolute rest, and follow the case carefully. We have been giving this little girl vaccines made from the pus, but with no effect. The left leg was affected. The knee was very painful, for the X-ray shows that there is quite a separation of the articular surfaces, but there is nothing in the joint, because we aspirated and found nothing. You can see how the condition has affected the child—it is like an acute case of rheumatism. The joints are stiff—pseudoparalysis. She is simply unable to move the lower extremities, on account of the intense infection, but the infection is subsiding. She will have an ankylosed left hip-joint.

OSTEOGENESIS IMPERFECTA

We have here a case of so-called osteogenesis imperfecta. The child is one of twins. Labor in this case was spontaneous. As is general in cases of osteogenesis imperfecta, the children are born with broken extremities. In this case, however, the condition developed after the birth of the child. The child developed normally until the sixteenth month. The child was breast-fed for three months, and then was given a mixed diet. The present trouble began at the age of fourteen months, when the mother noticed the child was losing strength, becoming very weak, and not being able to stand even when held. When being bathed it would scream, and also when the clothing was being put on. Perspiration was profuse. Constipation was present. Curvature of the spine was noted.

Family history normal. Mother has rather a feeble constitution, however. As a rule, the children with this disease are born with it. Just what causes it it is impossible to tell, but the nature of the disease is that the periosteal ossification is very deficient; the osteoblasts scarcely exist. The compact portions of the bone, along the length of the bone, are very imperfectly developed. They are present only in islands, and then insufficient ossification. The epiphyses of the bones are perfectly normal; the diaphyses are thin and bent. We

have a peculiar condition here; namely, the bending of the bones. The fibulae are scarcely to be seen in the X-ray; the fibulae are broken. Some of these children have been born with as many as one hundred fractures, owing to the lack of ossification. The repair of these fractures, as compared with that of fractures in rickets, is quite well defined. The ossification takes place rapidly, but in rickets it takes place slowly. In these fractures you will have the start of a callus and the cartilaginous deposit quickly ossifies, and after that you have remaining an annular ring over the seat of fracture. We had another case where we had a larger number of fractures, and the child was born with it. Very few of these children live, but there are cases that have been reported in which recovery took place and in which they have their full health.

What is the cause of it? Is it due to some poisoning? The etiology is dark. It is reckoned that in the cases where the children have been born with the condition there must have been a panostitis. There is evidently something of that nature in this case, but what it was it is impossible to tell. The treatment in cases of this kind is of no avail. Phosphorus does not help any. This child had some evidences of rickets, but that had nothing to do with this condition of osteogenesis imperfecta. In these congenital cases, as a rule, the child dies.

TUBERCULAR PERITONITIS

This is another interesting case. This child was breast-fed until ten months of age; then given milk and soup. The present complaint began in 1909. The abdomen began to be distended. There was no pain and no tenderness. She was brought to the hospital on account of the distention. The family history was negative; no tuberculosis in the family. This was a case of a thorough poisoning with the tubercle bacilli. All the glands of the neck, the retropharyngeal glands, the postnasal lymphoid tissue were tubercular. She had a tubercular peritonitis such as I have never seen. The peritoneum was as thick as my little finger, and completely studded with tubercles.

It is nothing unusual for a child to recover from a tubercular peritonitis. In this case two different surgeons thought there was a fluid exudate in the abdomen, but there was nothing found except the intense infection with tubercle bacilli. There was no idea at all that the child could recover; the case was thought to be hopeless.

At present there are no more glands in the neck—two or three were opened; the abdomen is absolutely free of tuberculosis; she is now a perfectly healthy child.

Treatment in this case has been by tuberculin. I started with ~~100~~ milligramme and increased the dose gradually. I gave this child fifteen minims of tuberculin without any reaction at all. What I was trying to say is that giving large doses of tuberculin is of no avail. The child made a perfect recovery, but I do not lay it to the tuberculin. I have tried immunization in a great many other cases, where we tuberculinized our cases, like Engel and Bauer, but I can say that in some of the cases it is absolutely impossible to raise the dose over ~~100~~ milligramme; there are sharp reactions. In such cases I am afraid of the dissemination of the tubercle. I do not think the tuberculin had any effect on the recovery of the child, which is absolute.

HYPOPHYYSIS DISEASE IN CHILDREN

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THE question the EDITOR asked to bring particularly to your attention is that of diseases of the hypophysis, in relation to the adipose-genital type and the other types incident to the earlier years of life. It has been my experience to operate upon four cases of hypophyseal disease in children. I refer particularly to those types beginning in childhood, although two of my cases were operated on at the ages of eighteen and nineteen. As you are probably aware, that type of the disease is particularly apt to develop from proliferations of the epithelium in the anterior lobe of the hypophysis. We most often find in these children—I think in the majority of the cases—that the disease is due to a cystic development. Cystic development may be due either to the filling of small cysts developing from the epithelium, but off from the pharynx, primarily, or it may come from a degeneration of the tumor mass, as was the case in one of my patients.

That type in which the development is from a biting off of an epithelial pouch from the pharynx in the anterior lobe is by far the most favorable type for surgical treatment.

As yet, our classification of the diseased states is not by any means clear, but the probability is that most of them come from the anterior lobe itself or the pars intermedia. I think it ought to be mentioned particularly to you as paediatricians that very often—most often—the earliest symptoms that these children complain of is simply headache. In practically all the cases I have had the children have complained of headache at the time of puberty. This headache has been persistent, lasting for four, five, or six days, going away again, and coming back at the end of three or four days, or three or four weeks; a persistent, severe headache, sometimes accompanied by vomiting and sometimes not. This lasts for two to three years, ordinarily undiagnosed, of course, and then the child begins to complain of

some difficulty in sight. He then goes to an oculist, who makes a diagnosis ordinarily of hysteria, the child complaining of headache and having scotomata without marked findings in the eyes. Remissions occur in the pressure and the child ceases for a time to complain of the sight, and the condition remains undiagnosed. That has happened in three of my cases—a diagnosis of hysteria being made because of the fact that the eyesight changed from time to time. As paediatricians, you should remember that a child near the age of puberty, with a severe and persistent headache, is possibly suffering from disease of the hypophysis, because hypophyseal disease is really much more common than we suppose. Not alone have we the severe types which have come to me for operation, but we have a great many types which never go on to the stage of surgical intervention, but which cause perversions of secretion and functional derangements.

The interrelation of the hypophysis with the other glands of internal secretion you are well acquainted with. It is of interest to mention that in one of my cases the child was treated with thyroid extract early in life, with complete amelioration of her symptoms. She was apparently well for a year and a half after this prolonged treatment with thyroid extract, and yet this child had evidences of complete destruction of a considerable portion of the anterior lobe of the hypophysis, and probably pressure on the posterior lobe by this tumor mass. Naturally, one would think that the feeding of the hypophysis itself in a case in which the trouble is diagnosed would be a much more efficacious treatment than by the thyroid.

Concerning the treatment to be instituted in cases of this kind, it may be said that it offers the most favorable type of the disease in which operation can be performed upon the hypophysis. We have, of course, most often in the older individuals the adenomata. These adenomata cannot, unfortunately, be removed by any operative procedure, in the majority of cases. However, even in these the symptoms can be markedly benefited by operative intervention. The patient can be relieved from headaches, and the eyesight can be made much better for a considerable period, but complete relief from the trouble is uncommon rather than common by any method of operative procedure.

On the other hand, the operative procedures in cases of cystic disease of the hypophysis do offer a possibility of permanent relief,

and I am sure that as our knowledge of this condition develops, and as we learn more of the operative technic and the proper time for operative intervention, many of these cases will be benefited. At the present time our surgical intervention, it seems to me, should be confined to that group of cases in which we have definite evidences of pressure upon the brain or upon the optic chiasm. As our knowledge of operative procedure develops and our knowledge of the disease increases the time will come when we will pass from this stage of absolute indication to the stage of relative indication, and we will say not alone in the cases of acromegaly—the other individuals—but also in the younger individuals, that this particular case is one in which there is hypophyseal disease, and in which operative intervention may be used with the hope of relieving the patient, and by feeding restore the genital and other functions which are, at the present time, in the majority of cases at least, permanently lost at this stage. The adiposity, polyuria, etc., are supposed to be simply evidences of pressure, as we understand it, upon either the posterior lobe or the pars intermedia by the tumor of the anterior lobe, and are not due to the disease, *per se*, of that portion of the hypophysis.

It is to be hoped that the time may come when the paediatricians may recognize these cases early and the surgeons develop an improved technic so that operation may be safely performed early, and thus preserve to the individual these functions affected by this disease.

My method of operation is as follows: I cut along the crease under the nose, raise the nose, and go through the sphenoid cells to the hypophysis. I separate the mucous membrane at each side of the septum, which lessens very materially the possibility of infection. I have looked up particularly in relation to the sphenoid cells in children, thinking there might be some peculiarity in the size or relation, but could not arrive at any exact knowledge on the subject. In fourteen out of one hundred of adult skulls examined the plate of bone between the sphenoid and medulla was thin enough to see through. It would be very easy, therefore, to go through into the medulla instead of entering the sella turcica. Another thing: One must be careful not to enter an ethmoid cell instead of the sphenoid.

Borderland Medicine

ONE HUNDRED THOUSAND MEN MINUS

BY JOHN ASHBURTON CUTTER, M.D.

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"All men cannot be born capitalists or statesmen or leaders in the professions; but all men can at least lead honorable lives. . . . While others are fond of pronouncing benisons upon triumphal achievement, I have often wished that some genius might appear to prepare a panegyric for the unsuccessful man."
—Theodore E. Burton, LL.D. Oberlin, Dartmouth and Ohio University, former Senator of the United States from Ohio.

WHILE not attempting to define the unsuccessful man, let us look, if you please, at a group of at least one hundred thousand men, middle-aged, in New York City, whose members will in the enormous majority die unhonored and unsung. These men have no organic disease as yet, in kidneys, liver, or heart, to name no more, but they are below normal in their capacity for work or enjoyment. Cut into one of such to the ultimate ganglia of the nervous system, and it is possible to find slight evidences of fatty degeneration, but finding or not, if one can get the opportunity to do such cutting and microscopical work, the fact remains, and most seriously obtains, that these nerve ganglia are not at full tone, and the man, to repeat, is below par, is minus.

How has this come about? Much depends upon constitution, but not all. We say a man has a strong constitution, inherited from his forbears; this is wholly true, and the man may be of large or small stature—for size of body counts not much, and in either case he starts in life with a most splendid foundation for his fight for existence. This foundation, or bank reserve, he may throw largely away by follies steadily committed as to foods, or drinks, or habits of thought, or time not taken in sleep, the lack of exercise or the overindulgence in the same. Or he may have tremendous burdens put upon him by family misfortunes, and have steadily and patiently to carry such; by finding out for himself how he must bear his load, he will conserve

his inheritance of constitution, and will go triumphantly to the end of a long and useful life.

Another man inherits a poor constitution—his family history is one of short and decaying lives—and unless this poor devil takes care of himself from the start, or, better, is taken care of from the start, his career will be limited. On the other hand, many of this poor inheritance live through years of large output of efficient labor. Genius, expressed in art, literature, science, has been repeatedly found in those of poor constitution. It would appear as if the man inheriting wretchedly of such is often specially endowed with wisdom to carefully pick out his path in life, while the man inheriting richly will often, to repeat, steadily defy natural laws and go down.

What constitution is—no man knows. We do know that all operations of the body, systemically and in detail, are produced by nerve force. We cannot measure, weigh, or find this mysterious living thing, abiding in our central nerve ganglia, the very essence of our being, which we can add to and which we can deplete. We know that a hemorrhage in the brain, shutting off the flow of nerve force to a vital organ, means death. Likewise we know that if a large artery is opened and the blood supply drained death ensues, because there is nothing for the nerve force to pump through the circulatory apparatus for the maintenance of organs. Further, the very taking away of the normal blood supply and pressure impoverishes the nerve-centres. This is exemplified in part in fainting, where the body recovers, by lowering the head and trunk, thus allowing the brain to again have its proper blood flow.

In chronic degenerative diseases of the kidneys and liver we have interrupted circulation, with dulling and obtunding of the nerve-centres. In tuberculosis, beside the general weakening of the body from the manifold conditions arising, there also is some wasting of central nerve force and poisoning again. Curiously, in this condition, the poisoning gives a false resilience to the body, filling the mind and heart with hope. The consumptive is always expectant of health; and what a merciful thing! This resilience is not so false, then, for he lives the longer and is able to take on means of relief, which are efficient in a percentage of cases.

There are certain diseases accompanied with much pain, and this pain has a very contributing effect on the final windup of the body life;

in other words, it wears out the central nerve supply. Pain then being a killing thing, we find, if it is controlled, a certain percentage of desperate cases, acute and chronic, ameliorate and are saved. A bunion or a painful corn will, after a while, use up an enormous amount of nerve force and put a man in a highly irritable condition. Bad music, too much good music, irritating and ugly and deafening sounds, draw upon nerve supplies. It is idle to say that because a person does not mind any of these he is not injured.

In ptomaine poisoning autopsies show acute fatty degeneration of kidneys, liver, and heart, similar to the lethal action of phosphorus. It is reasonable to suppose that these fatty degenerations are due to the nerve-centres losing full control of the ultimate nutrition of organs, and nature then laying down immediately a low-grade tissue, fat, in such. One who has had to work through these cases with the fortune of cure knows the narrow and tortuous path to travel. The pain is excruciating; nature is trying to push down and eliminate the poison by a series of muscular contractions of the intestines. The agony, if not controlled, will overwhelm the vital forces and kill. The nerve-centres have already lost a large portion of their force by this pain and the activity of the intestinal muscles; relief must come by morphine or the relaxation of the muscular spasms by other medical means, and if the attendant gives too much of drugs he will wholly overwhelm the nervous system, already in such distress, and death will result. These things are particularly said, for such cases occur in a hurry, and often the medical man called in is entirely new to his patient, knows little of his powers of resistance or reaction to drugs, and must feel along the way of treatment, cautiously, yet quickly.

What part does modern athletics play in this matter? A man's skeleton is not fully ossified till his twenty-fifth or twenty-sixth year. So physically the college undergraduate is not a man. In years gone by men were overtrained, their reserves of nerve force depleted, and some were so badly used up that serious and sometimes fatal chronic disease followed. The writer's friend, Mr. Herbert Reed, expert on sports, tells him that wonderful improvement has been made in the system or systems of training, and this not at the initiative of physical culturists, but of professional trainers, who have become naturalists, in the care of their charges. These men, usually without collegiate education, know when a young man is overworked, when one should

put on weight and another take it off, and they are specially posted as to the limitation of training to prevent waste of nerve force.

The game of football as now played is much safer than formerly; the ponderous mass plays of the past are gone, and injuries to head and trunk are exceedingly rare. We are a nation of rule-makers, and this is specially exemplified in college life; an evil, real or alleged, exists, consequently make a rule to stop said evil, while another walks in. At present, to prevent any possible giving of advice to a team in action, coaches and trainers are prohibited from the side lines. The trainer knows his charges the best of all, the coach next, and some of these two classes of assistants to the young gladiators should be constantly on the watch, ready to immediately remove from play any exhausted participant, for in such condition the protective resilience of the nervous system against the shock of sudden injury is minus, and death has undoubtedly resulted from lack of prompt interference.

It may be added that the best place to see the details of a game is from the top row of the arena, and the best place to manage it is that of the playing captain—hence the double folly of this rule which tries to prevent something that will not happen and does prevent the actual watching of the men as to the depletion of nerve force.

Columbia had been for years sending to the Poughkeepsie course the finest specimens of crews as to technical watermanship, yet rarely winning. Prior to the 1914 regatta there were many rainy days, and the crew lost at least thirty per cent. of its training on the river, with the result of conserved nerve force, which won the race.

Cornell's previous splendid list of victories had another cause—the master Courtney had developed in his stroke a very limited period of relaxation—thus, so many times a minute there was literally, in the vernacular of the day, nothing doing in the central nerve ganglia.

Men in a football or basket-ball contest, whenever time is called, throw themselves down and absolutely relax, saving nerve force thereby, and perhaps winning the contest.

It was a matter of common observation up to recent years that Harvard football teams were overtrained, had gone stale, and hence were often beaten. How much this worn-out condition affects the psychology of football one cannot say. Will and courage are two

important things and supposed to be independent of the body, for we have seen, in the practice of medicine, the very sick rising by will power to a dominance of things and winning out. If, however, a football team or a crew has overdrawn its supply of nerve force prior to a contest, no matter how courageous the men or how their will drives them, they cannot win, other things being equal. And it is a fairly reasonable conclusion that the overdriven team or crew will not have the will and the courage of its opponent better handled in training and practice. Rallies in athletic contests are seen like the instances before noted in general medicine, but the thrust is there only to a limited extent.

Between the Harvard games with Princeton and Yale this last fall were two weeks; during these Harvard, with a team largely substitutes, played Brown; there were otherwise in this period but fifteen minutes of actual scrimmage practice, and on the day of the Yale game Harvard went on the field with nerve-centres abounding in force. The result is football history.

The size of a muscle is not the measure of its strength; the measure comes in the amount of nerve force actuating the muscle, and men have been damaged by overdevelopment in that line.

It has been said that men are not men physically till at least twenty-five years of age. The growing youth shows enormous ambition, and tremendous appetite for foods. He is ready to take up any proposition put before him, from playing in a championship contest to settling any question in religion, philosophy, or statesmanship. This activity is nature's provision for the work of making the tissues and skeleton perfect, and the storing up of reserves of nerve force, thus adding to the constitutional supply. Apparently the husky youth of eighteen to twenty-four is capable of all kinds of endurance, and he is, physically to a certain extent, mentally to a limited extent. The driving of these youths in athletic contests for new records is barbarous, yet is kept up year after year, and fools applaud the new hero and record-breaker, who may have so exhausted himself that it will take years to repair the trouble, if it is reparable. At any rate, he is made, for the time being, minus. This wasting of nerve force in youth by physical athletics is also done in mental athletics, in school and college, in the strife for prizes. The undergraduate of decades ago, who said he would get first honors or lay his bones in his coffin,

accomplished both. Why such extravagant wastes of nerve force will result not only in nervous prostration, but some years later in a steadily persisting and fatally ending chronic degeneration of kidney or liver, cannot be said. The abstraction of nerve force from the central nerve ganglia in some way so affects vital processes that the facts are as stated.

The horseman puts it in this wise: a horse is capable of doing a mile race and winning against most any comer. If during the first half mile the animal is overdriven or overridden, his stock of nerve force is wasted and the poor beast "blows up."

Babes suffering from cholera infantum, wasted and shrivelled into the miniature likeness of a very old and shrunken man, have been treated with relatively large doses of strychnine, which energized the small but latent amount of nerve force until nature, thus awakened, went about her business of cure, and successfully.

This latent supply of nerve force is what carries people through serious illnesses, and saves after capital operations. The latter are not always easily recovered from. Anæsthesia alone is a shock to the nervous system, and with loss of blood and the cutting through nerves and tissues the shock is added to. Surgery has done very great service to humanity by improved technic, resulting in quickened operations and in methods of preventing shock. The fact remains that while thousands of operations are done daily and nightly in this big country, with an exceedingly low mortality, every man should know that he takes a chance, and he should take that chance, when necessary, calmly and decisively, thus giving the operator valuable assistance. Women in these surgical conditions generally do better than men: for ages they have been bearing children and withstanding strains, and it would appear as if their courage and calmness were matters of inheritance, provided some harpy has not been frightening the woman about to go into her time of trial.

One in the dentist's chair can hypnotize himself into suffering but little when a painful job of work is on: but on leaving he will find himself weak and nervous, for his lack of pain has been due to calling upon reserves of nerve force.

A man of justly-earned reputation was, during his college days, a heavily-built fellow, and earned glory for his Alma Mater on the athletic field. To-day he is weazened and shrunken, and of such

irritable disposition to his associates that he is cordially—yes, most cordially—hated. He has earned his success by tremendous application of his mental powers, and has already paid the price, and will pay more heavily, unless radical change is made in his method of life and his neurasthenia is cured.

It is a common habit among many to say that the men honored and sung, occupying highly responsible positions in the great corporations, are overpaid, but it will be found that these men are living up to and beyond their strength, are in the minus class, and when removed by invalidism or death their places are not easily filled.

This minus condition also applies to younger men in the thirties who are in the struggle to make things go and take care of their growing families, according to the demands of our overcivilized and finicky state of affairs. These demands are that certain clothes shall be worn in certain seasons and, even, months; that such social obligations shall be taken on and met, and that time for real relaxation and friendly intercourse is not to be had. Let the man who has lived beyond the age of fifty, and has developed a little common-sense philosophy, take a serious look over the faces of these young men, say at a college reunion, and he will see some who are in the minus class, in which we also find fat men, thin men, and medium-fleshed men.

One might go on for pages showing the vital relations of this subject. This presentment, indictment, or accusation of modern social conditions is made with difficulty, as the man minus so often does not present any stigmata or symptoms of this nerve waste, to the laymen especially, and if the latter expect herein any marvellous or miraculous explication as to diagnosis and treatment they will be disappointed. Humanity in its relations, governmental, legal, clerical, and pedagogical, to name no more, has always reeled and staggered along, and the millennium of perfect knowledge is not for our day at least. So let us journey on the way as best we can.

The man minus is the man "behind the gun," for generally he is the American father, who is the good provider, often to the extent of folly, of his family. He, the "old man," is the handy instrument at the end of the week in meeting bills and in keeping his patriotic sons in college, when some of them would be doing more good to the world by digging in a ditch. Daughters ask "father" for the cost of new garments; it does not enter their heads, to say nothing of

their hearts, that he might sicken or land in Sing Sing as the result of the methods employed in making the money, but the only thing which worries them is as to how long it will take him to get it.

The man minus, while a good provider and fond father, is often not thought of as an important social entity, and this very lack of appreciation hurts him. Marrying, he had placed his bride on a pedestal of grace and beauty and forgot that she was subject to the common weaknesses of humanity. Pouring out on her the things to be bought with money, and asking little in return, he often did not get that little. The state of mind thus developed in him caused worry and unhappiness, important reasons for his being below par, and, added to his business strain and the absence of proper relaxation in happy home surroundings, the neurasthenia further developed.

Another man marries suitably; that is, to a wholesome, unselfish woman who understands the involvements of life and has not been poisoned by conditions about her. The man sets out to be the family drudge. Children come along, and his highest ambition is to make the road easy for them and as if struggle was not a good thing. No matter how much their mother and they may do to make him live broadly, he persists in his drudgery. The pushing of his business or his profession is the whole thing. He is happy in it, so he thinks, but he is really blinded to his own needs and to those of his family, so far as the things of the heart and mind are concerned. Fortunately the children of such a mother are not often damaged by their father being nothing but a man immersed in one thing, and sometimes he is worked out of his narrow life; if not, he is certain to land in the minus class.

Clerks in banks, offices, and warehouses contribute to the one hundred thousand men minus—a grinding, highly-organized social and economic system, lacking adventure, causes again a stale life. How much attendance on baseball games helps such men one cannot say, but the help is a truly splendid thing, and all without the murders done in the days of gladiatorial Rome.

Partisan politics financially remunerates but a few: the greater number participating are enthused and brightened by their activities and have a chance to work loose some of the venom of the mind and heart, more or less engendered by the course of humanity, by criticising the other party.

Prize-fights are another means of relaxing men—not only the excitement relieves abnormal nerve tension and causes a forgetting of the anxieties of the day, but absolute democracy prevails, and the poor man finds himself on the level of the fifty-thousand-dollar salary man. There are people who think these contests are horrible, but who view with equanimity a football game: why can they not let others have their rights as to recreation?

Man to-day occupies considerably of a contumelious position. Thinking individuals conversant with the status of forty years ago, specially in country life, would not care to go back to such. Then the man was practically a tyrant in his house, and his women folk, if they "put over" anything on him, had to do it by the highest form of strategy. At that, those old fathers handed down very much of well-balanced justice.

With the development of the last four decades women have been brought very much into the centre of many activities. The increasing cost of education alone, to say nothing of other causes, has diminished the size of families and made women go to work in order that they might enjoy the things material and mental which they thought they needed, and with the result that many of them are denied the greatest honor, glory, and privilege—maternity.

For men do not marry as in former times; and when they do, it is much in ignorance of the humiliation due when unable to make up to the woman in money what she had been earning before marriage, or what her parents had been spending foolishly upon her, their angel child.

With the men who do not marry, life does not flow with a splendid amount of satisfaction, even if making money easily sufficient for shelter, food, clothes, and conventional recreations. Such men are not experiencing the responsibilities of maintaining a normal family.

Married or unmarried, the conditions of modern society are not wholly sane. No marriage, deferred marriage, and unhappy marriage certainly do not promote even-tempered, satisfying, and soul-filling existence, and sooner or later must react to put the man in the minus class.

The writer does not know what feminism is, or, for that matter, what socialism is. He is, however, interested practically and as a matter of study in what is going on to-day. Born of a woman, nourished, reared, watched over and loved by her, his belief in immortality

is based on his expectation that he will see her again and that she will take him in her arms and comfort him as when a little boy. He has known but two men who did not cherish their mother's memories, and these mothers must have been physically and mentally ill, for their boys knew nothing but a nagging life with them.

Men make the laws and execute them: they have it in their power to act as they please with women. With this present unrest and with women desiring to do so many things demanding our respect, veneration, and love, listening not to men of broad experience, ready to rush in where "angels fear to tread," and expecting exemption from the operation of the law if they do murder, is it any wonder that men are nonplussed, upset, and perturbed, and that many of them are, for the time being, sinking into a mediocrity of effort, becoming minus?

A good woman is the best of all things created, for in her heart is ever-abounding charity. The man leads and acts, while the good woman is always moulding him to the best of things. "Votes for women" is a negligible matter either way: if women really want such, they will have the obligation, and will they get more than they want?

A man cannot take a woman by the throat and choke her, or beat her up with his fists, yet those were early forms of settling questions among men, and are still employed quite satisfactorily.

It seems impossible for ordinary men to make clear to the so-called reformers that all they desire is no dethroning of women from the worshipful position of our mothers.

A cure is coming, and men and women will be on a more wholesome, self-respecting basis than ever. How long this new birth in the body politic will be deferred one cannot say. Perhaps the frightful cataclysm in Europe is the commencing travail.

Sometimes these men minus break loose, but the larger part of the one hundred thousand, if they have any family obligations, go about their daily work without any complaint till some chronic degeneration begins to upset the balance in the body systemic. Then they hasten to the medical man, and, if not too late, much time is spent in getting well or moderately well.

Those who have viewed suicide at close range feel that no one would ever translate his existence if he appreciated, in a measure, the anguish to be put upon his family and friends, for the tragedy is not forgotten and grief does not cease.

Eliminating suicides due to organic diseases or tremendous financial involvements, some of the men minus are so ending matters. They will slip away, and by poison, or bullet, or craftily-planned accident go out. Others have had their relatives warned of their unbalanced nerve states, the warnings ignored, and suicide attempted or accomplished. The man who has not "made good" in the conventional sense will often pull out and let his family worry along, or his wife will leave him and make the living; or, weakened morally and not cutting down his expenses, he suicides.

The strangest class apparently is among those born to the purple of wealth and position, who marry happily and enjoy the esteem of the world. These men suicide because the very surety of their lives has given them no incentive to get out and fight for existence. The will has gone stale, for the supply of nerve force in these well-nourished care-free men was plenty. Further, men who have succeeded from humble origin, making money and achieving social position for their women folk, go also stale in will and probably in nerve force, and end things, as the pace has been swift and, arriving at ease, there is nothing else to accomplish. We also find young men in suicidal despair because they are not going faster. This is a grim subject and more should be written upon it. Knowledge brings prevention.

All in all, we can agree that the man minus needs watching and care. Crusades as to the nurture of babes are splendidly hopeful and efficient, but what of "father," the man destitute in nerve force, who has worked, suffered, acquired knowledge, and endured? Let society not neglect either class of humans.

The great life insurance companies are making or are to make yearly examinations of their risks. The modern social tendency to regulative action before the fact, when placed on a common-sense basis, will be helpful. But, as often expressed in the efforts of institutions corporate, by getting away from local individualized human acts we do not find the efficiency so confidently expected by protagonists of reform. The insurance companies, recognizing this, are not trying to care for their risks when found out of order, but are sending them to the medical man.

The doctor of medicine is literally a corporation licensed by the state, and depends for his livelihood on his integrity as a man and

on his constant industry as a student of medicine. This human corporation is a trust, drawing upon the knowledge acquired by thousands of men, dead and living, for the welfare of his *clientèle*. He, this trust, deserves the as yet unprepared panegyric upon the unsuccessful man, for he dies usually poor. If he has made money, as infrequently occurs, such fortune is largely factitious, and not due primarily to any as yet undiscovered financial grace in the profession.

The humor and not the pathos of it all is that the medical man does not care, and is ready to be translated with no expectation of post-mortem honors. Quite a decent sort of trust! It is true that the medical profession did at one time live in the hearts of the people, and this indwelling has been largely ousted by the worship of the Golden Calf. It is to be hoped that the breaking of the old confidential, inviolate relations of the profession and the public is not to be permanent.

The man minus, or thinking himself minus, will expect a thorough examination on consulting the individual medical trust. Some cases will present disturbed functioning of various organs, underlying or correlating the depleted nerve supply. Others will present absolutely nothing wrong in kidneys, liver, intestines, etc., yet are in profound neurasthenia or closely approaching such condition: here the diagnosis will have to be made on the general behavior of the patient, and such diagnosis will probably take some time.

In the management of these cases the younger men in medicine have the advantage of greater vitality to put out, while the older men have the benefit of poise in judgment, based on hardly-earned experience in the care of sick human nature. Any deviations from healthy standards of action of various organs generally will be speedily removed.

Then follows the big thing of replenishing the devitalized stock of nerve force. This will mean adjustment as to food, for some eat too much and some too little; the regulation of exercise, for again some put out too much time and activity taking it, and others take too little; the going deeply into daily habits as to worry, work, or pleasure; a study of the relations in the family; the methods of relaxation, if any are used: with one, a book; another, a show; others, music, automobiles, sports, games. Some rush frantically from their homes at night, seeking relaxation and recreation by finding others

and excitedly getting another view of life; while, on the opposite side, a man may take his literary recreations so seriously that he becomes their slave. The saloon is found to be a club for many to relax in and relieve tension, and society provides nothing practical to take its place.

Leaks of nerve force from foolish habits of thought and from undue worry must be stopped.

The man consulting may be well-to-do, drawing a very comfortable salary, but despite his ambition and the forces around him urging this ambition, the medical man is liable to curtail such and prevent his patient taking a position with higher income and more honors and in which his vanity would be fattened and petted.

The problem in all these cases is most seriously not for to-day or for to-morrow, but for several decades to come. The trust, when his conclusions are well grounded, will have no hesitation in advising radical changes in the way a man confronts and conducts his business or profession. Often it is only a matter of modifying conditions surrounding him.

Some cases will lead into deeply and intricately involved family relations, taxing the physician to the utmost for advice; but patient and adviser standing fast as time wears on—and how hardly with some does it wear on!—the solvent is found.

The human body contains many chemical laboratories. There are also electrical or vibrational dynamics to be considered. Members of families sometimes wear on one another because these vibrations are not synchronized, or they may be in such accord as to set up a superharmony, which may become an irritant.

Money in the kingdom of health is an important matter. There appears to be a beginning of a getting together of the physician and the public in such. This is not the place to outline the evil economics affecting the physician, the really indigent sick of the people, and the man who does pay his physician. Briefly let us, however, make something of a *résumé*.

In New York and other giant cities of swiftly-changing population the direct purpose of many to "do the physician," the enormous amount of work put out in dispensaries and clinics without compensation, and the desire of the public to see the physician in more or less luxurious surroundings, lead the medical man in sheer desperation and disgust to be harsh at times in his charges.

Frankness on the part of both parties in this matter is highly needed. A man of fair means may pay a relatively large fee for a thorough study, and, going away with general directions which can be easily followed, will not see his adviser for some time. Another case may need care and attention for one or more months, or even a year, and it may develop that a contract, verbal or written, has to be entered upon. The study to be put out on these cases cannot be estimated as a matter of so many attendances in the medical man's office.

It is a matter of work to be done, and the man must pay according to his means. The man earning a small salary makes one payment for his care, naturally a discount occurring, while another will pay by the month and on a heavier scale. The man seeing his adviser seldom must pay the highest rates, according again to his ability, for that seldom attendance puts a heavier strain on the medical man than the frequent one. Certain cases need constant care, while others, as before noted, only occasional attendance: the whole matter, medically and financially, is the problem of each case.

In the foregoing some of the men minus are found to be in the limited class of those to be honored and sung after death. So as in life there is nothing of man's production wholly perfect, the writer has not been able to make Senator Burton's plea, most gratefully used as an exordium, fit wholly the subject matter.

And thus herein a consideration of the men minus, in their relations to the beginnings of chronic degenerative diseases, is not found. This may be said: Men sometimes die and the cause of death can be given only as nervous prostration. Further, high blood-pressure and arteriosclerosis occupy much attention—yet cases of high blood-pressure under the most careful scrutiny afford no evidence of disease, and the only abnormal state existing is a depleted nerve supply, causing this on-edge state of the nervous system, with the accompaniment of increased vascular tension.

Detailed means of treatment have not been presented, for the reason that such knowledge is not obtainable; for, again, each case is a law unto itself—each problem a different one.

These cases cannot be managed by philosophers, chemists, and physical culturists: medical men are all of the foregoing classes, and very much more, for they know the landmarks of the frontier of disease, the enemy's country.

THE IDEAL PHYSICIAN AS THE CITIZEN-BUILDER¹

BY IRVING DAVID STEINHARDT, M.D.
New York City

In the short space of time allotted to me on this evening's programme I am going to try to cover much ground, for my subject is a very great one, regarding which much can be said. To many of you my remarks may appear to be those of a dreamer, and I must plead guilty to the charge of having ideals. I am a dreamer and I like to close my eyes and look forward to the time when the medical profession will come into its own, and that time will be in a nearer future as we advance ourselves in the eyes of the public, as real builders of useful and good members of the community, as well as mere "repair men" of physically or mentally impaired persons. It is true, perhaps, that, first of all, we must know the alleviative and curative sides of our profession, for those, unfortunately for all, including ourselves, are what we are most often asked to exercise in behalf of the public weal; but never must we neglect to educate ourselves to be able to practise the "citizen building" part of our work and to bring it into daily practice with the same, or more, enthusiasm as the medical work, just as soon and as often as we can. It is by doing this that we can refute more readily the favorite charge of commercialism constantly hurled at us by the many strange and weird cults of doubtful value which seek to usurp our honored places as medical advisers to the people. Of course it is true that all these "isms" are purely commercial enterprises, and usually very much more expensive than are the charges of our profession; but by raising enough hue and cry in the eyes of the public regarding us they cause the public to forget their own charges and perquisites.

This country, like every other country, needs citizens in the real sense and meaning of this word, and no one set of men, not even excepting the school and college instructors, has a greater opportunity

¹ This paper was read at a meeting of the Medical Association of the Greater City of New York, held April 5, 1915.

to improve the standard than the medical profession. It is our privilege to come into intimate contact at all ages of life with a greater percentage of the population, and we should make use of this golden opportunity to accomplish the above-mentioned, very-much-to-be-desired result. With the steady decline of the former close intimacy between the various churches and the people at large we must step into the resulting breach and add one more duty to the many that the practice of our profession already puts upon us, and we must accept this additional burden cheerfully, because it is for the public good, to make the people happier, more contented and healthier. Of course this latter Utopian state of affairs will tend to decrease our incomes, but, after all, while we must live, as we all realize, ideal medicine hopes and looks forward to the time when our incomes will be derived from preventive medicine rather than from the curative side of our work, as is the condition to-day. It will not be anything so very new, either, this being both preacher and doctor, for in the very ancient times the high priests of the temples were the only doctors to be had; therefore we shall be but reviving an old custom, albeit, by reversing matters, having the doctors become preachers as well, and, we hope, by deeds as well as by words.

Despite the fact that, at patriotic celebrations for our various national holidays, we are told by ambitious politicians, office-holders, and others who seek the public favor, what a wonderful people we are, I think that the very great majority of us do not believe all the praise that is flung at us, and which the assembled multitudes applaud while "throwing out their chests" for the "oratorial medals" to be pinned thereon. In fact, I believe we realize that, after all is said and done, we are not all we have been "cracked up" to be by the gilded tongues of the chosen orators of the occasion. In our heart of hearts we know that things have been told us that are untrue, and that beneath the thinly varnished surface of the apparent greatness and "wonderfulness" is a very ugly and even rather hideous interior. While we may love to pat each other on the back and shout "hurrah" to the "so-much-a-line" articles in the daily press and magazines, etc., we realize within ourselves that all is not as beautiful as it has been painted, and that many things will have to be changed to make it the ideal we are asked to believe it is. When we are honest with ourselves we realize this very unpleasant fact, and if we are truly

good citizens ourselves we devote a little time to serious thought and deliberation as to how the beautifully-painted word-picture of the gifted orator and writer can be made an everyday reality.

In plain English, we all realize that our citizenship of to-day and the growing citizen of the future need constant, faithful guardianship to bring about the ideal goal we are striving for. For the medical profession is this task an indicated one at present, and we must face it unflinchingly, determined to give a good account of our stewardship. The more we win out in this direction, the better educated a public we shall have to appreciate our work in this and other directions, and who will insist that our legislators protect them and us from the many "isms" that are constantly springing up here, there, and everywhere to menace the health and well-being of the public by fraudulent means of cure supposed to be based on special God-given powers of healing, black art, specific prayers, personal discoveries or powers limited to the particular healer, or by other mysterious arts and sciences—if you will pardon my misuse of the phrase "arts and sciences" in this connection—and to nullify our efforts to improve the general tone of the people.

So much for my introduction of what is to follow, and I trust it will appeal to you and make you feel that your chairman was justified in putting my paper upon your programme.

Besides the children of American ancestry of several generations, we have the children of native-born parentage of a first generation, the native-born children of foreign parents, and children of foreign birth who have been brought here to our country at ages varying from infancy upwards. This is quite some mixture for our country to assimilate, and of which to make citizens of worth for the future. It is unfortunate that actual circumstances compel me to put the children of old American families into this "melting pot," but all will agree with me when I say that in many instances it is our "adopted" citizen who best stands the tests of good citizenship at present.

In adult life, to be moulded into good citizens of the highest type, we have those of several generations native born, those of the first generation native born, and our foreign immigrants. Here again are several elements of different textures which have to be woven into good citizens for our and their mutual advantage.

From the foregoing statements of what we have to work upon you may very easily see that the task of making good citizens is a very great one, with many and varied characters and natures to remould into real Americans: a very gigantic task for the profession, but, like all large undertakings, easily accomplished if each unit assigned to a definite part of the whole does its work truly and faithfully, and can answer "Properly completed" at roll-call, when the final checking-up time comes.

In the rôle of citizen-builders we have to work among the rich and the poor, for the rich are not necessarily the best citizens nor the poor the worst, nor *vice versa*. We shall have to work with the educated and the uneducated, the mature and the immature, the "easy-going" and the hard-to-please. We shall have to educate our private patients, and also to work none the less faithfully among those whom our faulty social system causes to seek our medical charity and to whom we give our services free at the hospitals, dispensaries, and clinics; and, last but not least, we shall have to work with ourselves so as to be fit teachers for this important instruction, for it is but too true—we are not too perfect—in fact, far from it, if we are to believe some of the tirades directed at us by many of the aristocratic and autocratic self-appointed leaders in the profession. I trust that, despite the nature of my paper, you will not class me with this particular group, nor think I have come to instruct you in your duties. Indeed, I fully realize that many of you could, perhaps, be very valuable teachers to me. I am one of you, and I think that I see a way in which we all, by working together, can advance our noble profession, and make it of more value and more worthy of the goodwill and respect of the public, by making of them a better public; and I offer it to you for your earnest consideration—and, I hope, adoption in your daily practice.

Let us first deal with the question of our adult population. How can we make them improve their ideas and standards of citizenship, and lead them to understand that they need this improvement as much as "the man next door"? You know we are all prone to see the faults of the "other fellow" and be most generous in our desires to correct them. How can we make them realize that voting on election day is the duty of every good citizen, but is not all that there is to good citizenship? How can we make our female citizens realize

that the franchise is not all there is to good citizenship; that the hand that rocks the cradle still rules the world, and that their proper attention to the home and its numerous cares and duties will do much towards making good male and female citizens of the future? How can we make both sexes realize that it is their daily actions, week in and week out, that stamp them as good or bad citizens, and not merely the spurts in one direction or the other? That the words and actions of private life in the home are as important as the words and deeds of public life without the sacred portals of the home? That they must be good sons or daughters, brothers or sisters, husbands or wives, fathers or mothers, as the case may be, before they can really be good friends to those outside of the home, for the home should be the foundation stone of all worth-while traits and qualifications? A nation which loses its respect for and the ideals of the hearthstone cannot advance, but must retrograde. We must not be like a certain class of preachers who say, "Do as I say, and not as I do." Preaching does the most good when backed up by actual practice.

One of the main things undermining our advancement towards a better citizenship is the great desire for wealth and pleasure; the well-to-do reaching out for more and more, and the poor aiming to be raised to the ranks of the well-to-do. How to accomplish their ends, so far as getting this added wealth is concerned, seems to be a matter of indifference, so long as it is accomplished. The old worsted-worked plaque, with its trite statement that "Honesty is the best policy," has long been out of style, and rapidly following it seems to be the quotation that it bore. This great desire to get would not be so open to criticism were the desire actuated by a worthy motive, or even just a desire to gain, as an index of one's business acumen or of application in business or professional life; for, unfortunately, at present, we are apt to judge a man by his monetary gains rather than by his actual ability or intelligence. But no, in the case of the rich the longing is but to be able to spend more, in a vainglorious attempt to outdo the show and display of a neighbor in society; in the middle class the desire is for a better chance to ape the rich and to make easier the road to social supremacy, and among the poor, only too often, there is nothing more than a silly desire to have more to spend on "near-finey," rather than the legitimate and natural want of better homes, comforts, and mind betterment.

The so-called upper classes for whom, in their talk and publications, the poor profess to have contempt are the very people this same poor seek to copy in both dress and mode of living. So you see why the "money god" is such a menace to our national future, even as it is such in our present day. All classes of society are madly striving for it to the neglect of better things, and admitting to its higher ranks those who have it, without questioning the means whereby it was gained. No nation can survive, much less advance to better and higher planes, if it condone the stealing of much and "virtuously" punish the probably needy malefactor or the petty thief who but follows the example of some one in a higher stratum of society. There must be but one justice alike for rich and poor for the best results, unless, indeed, justice be more stern with the better-educated offender against our social and moral laws. Unfortunately many of our large fortunes of to-day have been built up by moral theft, even though all the transactions were legally correct. We all know that the histories of our cities, states, and even of the national government, reek with stories of dishonesty in the administration of affairs, engineered and fostered by wealthy persons, through trusted secretive agents; how, in many investigations, quite well-known men seek "immunity baths" to protect themselves from future prosecutions, or quote the statute of limitations as a defence to indictments alleging dishonest practices, instead of standing up "in the open" and proving themselves innocent. I do not believe I need say any more to prove my statement regarding the bad effect the "money craze" has upon good citizenship.

As physicians we have always preached, and rightfully, too, that "all work and no play makes Jack a dull boy," but to make one's whole object in life pleasure is not going to advance the human race very much in either health or happiness, but, in fact, is going to mean disaster in many ways. There are healthy recreations, refreshing, invigorating sports, and relaxing pleasures; also there are debasing, degrading, and harmful "alias pleasures," and many of the so-called pleasures of to-day are merely immoral, weakening pastimes whose end result is broken health and homes and wasted lives. Mind-wrecking paces destructive alike to young and old are setting an example to our growing, future citizens that, if persisted in, will mean, in the course of time, the downfall of all that we have heretofore been

taught constitutes our greatness. I do not have to go into detail regarding what I mean. In our daily routine of private and free medical work we meet the results of it—old young women who have tasted the bitterness of wrecked moral life, broken health, and the shattering of the ideals and hopes of youth, although some of them are still but mere girls in actual age; would-be young old women who have also wrecked their health, endangered the lives of prospective offspring, and set an example to their growing children of all that a wife and mother should not be. We see also the *blasé* old young man to whom everything is not worth while, whose morals are low and ideals still lower, whose health is shattered, whose nerves are diseased, and who is the carrier of certain vile diseases that should make any decent, clean girl shun him as she would the lowest of degradation. We have the very unpleasant picture of ancient old men forgetting the dignity of maturity and trying to act the boy and young man again, but not the nicer part of this time of life, only the ugly, repulsive, dissipated phase of some boys' lives; an example of all that the husband and father should not be, showing to our youth paths which, to follow, mean the destruction of the bulwark of our nation—the home.

In our daily relations, therefore, with our adult population we have to turn their thoughts towards combating these two evils. It can be done most successfully by each one of us doing his part of the work, putting all his heart into it. Of course, as I have already stated, "words are the leaves, deeds are the fruits"; so we must try to set a proper example ourselves, as well as being mere instructors in words. We must set an example of ideal citizenship in our various neighborhoods or communities, and we must secure the coöperation of our wives to do their parts as ideal wives and mothers, so that our own growing little ones will, through these examples, be proper missionaries among the children of our sphere of influence. If our own names and reputations are not clean, if our own homes are not the seats of marital and family happiness, and if our devotion to our own particular line of work is not ideal, we cannot expect others to listen to us in the proper spirit, nor to profit by what we would tell them. If our own wives are neither devoted wives nor ideal mothers, we lose the force of having a good model to point out as a pattern for other wives and mothers whom we would instruct. If our own

children are misbehaved and ill-bred, we are liable to be told to keep our precepts for home consumption. All this shows you how important are our own homes and the aspect of the inmates in this social part of our work.

Aside from our own actions, how are we to instruct the adults with whom we come in contact as to the standards of better citizenship? My own plan is to endeavor to win the entire confidence of my patients, whether private or free, and to show them I take a personal interest in them aside from their medical ills; that I am just as anxious to advise them as friend as I am to treat them as doctor. I try to be a real friend by telling them the truth, not a mere flatterer to strengthen myself as their medical adviser. When I believe they are wrong I tell them so, and explain to them why I hold these opinions, and I am perfectly willing to argue *pro and con* with them rather than set myself up as some sort of a superior being whose decision is irrevocable because of the impossibility of its being wrong.

During the course of such relations you have the opportunity of learning many things about your patients. If he be an employer you can learn his attitude towards his employees, giving him praise and proper appreciation where he is worthy of them, as you know that recognition even by you will stimulate him to better things. But, if he be deserving of censure, show him by reasonable and sensible argument that poor pay, long hours, discontented and unwell employees harm his business, his output, his profits, and the future of his own family. Be logical in the reasons you set forth, and likewise emphatic, and let him see that the good-will of those he employs is worth while having. If he be an employer of female labor you can tell him a few things without making a medical student of him which will indicate the necessity for special consideration of women at certain times each month, which not only will they appreciate, but which will cause him to be a benefactor to the future, for it will enable these prospective wives and mothers to be in better health in the present and to be stronger and healthier for their normal duties in the future. Of course you can still go further and believe as I do, that all women should be kept out of stores, factories, shops, offices, etc., and be trained for their real mission in life—wives and mothers—in good homes; and tell him how he is undermining the future of his sons and daughters by employing female labor because it is cheaper

than the wages that would have to be paid out to male workers. Young men can not very well marry on small salaries, and if their natural life helpmates are continually going to be their competitors in the labor market, offering their services at smaller rates of pay, there is going to be a lamentable reduction in the number of marriage ceremonies, births, and happy homes as an end result, with a consequent and more deplorable increase in immorality—a horror that we of the honorable medical profession should always be on the alert to defeat.

Some of you may say there is no reason why the combined incomes of the work of the husband and wife should not support the home, and that, with this in vogue, the dangers I speak of are met and disposed of. First, I would ask, How many of you would be willing to have your own wives do this through necessity or even otherwise? Second, I would ask, How many of you want your children and your homes left to paid servitors while the real mother and home-maker is out doing some work to help you maintain a certain style of living? I do not believe that many of you would be willing to have this state of affairs in your own households, and no one else should be forced to have it in his if he does not wish it; and neither does it make for better present or future citizenship. I know we hear much talk these days—and a great deal of it is the sheerest nonsense—about married women without a vocation being mere economic and social parasites. This may be true of some shallow-minded, childless-through-choice, silly, society-mad married women, but it is the rankest sort of a slander and the vilest sort of a lie when applied to the ideal wife and mother; for, no matter how much of the family income passes to her, usually she is merely a disbursing officer for the benefit and comfort of others, very little of what she actually expends being for her own personal benefit; and the husband of such a woman is more than repaid for the money he has earned and given to her to expend by the love, devotion, loyalty, faithfulness, and unselfishness of the wife and mother who is ever vigilant in her care of him and “theirs.”

We do not want the wife and mother in the battle-fields of life when it can be avoided. The best interests of the nation, the home, and the children are conserved and served when she is in her natural element—the home—guiding the offspring of love to the highest standards of future good citizenship. A very tardy recognition

of this fact by the state itself is more apparent every day, as you see by the number of bills introduced into the various state legislatures to pay widowed mothers a stated allowance per child, so that they can remain at home and devote their time to the proper upbringing of their little ones, instead of leaving all this to chance, while they go out to earn an insufficient pittance upon which to exist. Bills of this sort, properly drawn up, should receive the unanimous endorsement and support of the medical profession. Morality and marriage would both be promoted if men were assured that their dear ones would not be left to the none too tender mercies of an indifferent workaday world in case of premature death before they could accumulate a competence for their families. Yes, I know they should carry life insurance—and most married men do—but this also costs money, and it takes twelve thousand dollars of insurance money put out at five per cent. interest per annum to earn even the small income of fifty dollars monthly, and this amount of insurance would cost anywhere between two hundred and fifty and three hundred dollars a year—a price, therefore, not within the reach of everybody. Of course, we look forward to the day when, with compulsory national or state life insurance, it may be cheaper and therefore within the reach of many more people.

If your patient be an employee you can readily ascertain his views on various things, his ideas, ideals, and ambitions. You can encourage these where they are worthy of encouragement, and explain to him where others are not to be worked for nor desired. Teach him to understand the dignity of labor, and not to look upon his daily toil, no matter how humble it be, as just a mere way of making a living. Show him where his employer is not his natural enemy, but just a worker in the daily life battle as he is himself. Let him understand that money is not the essential item in being a good citizen, but rather, in altogether too many cases, unfortunately, a drawback. Teach him his duty toward his fellow-worker and his neighbor, and the real value of the Golden Rule, which, although usually attributed to Christ, was of still more ancient origin. Employ your best thought to show him there is no such thing as a constant battle between capital and labor, for capital cannot exist without labor and fully realizes it. Not even the richest man is so foolish as to believe that money unsupported by its ally, labor, can be productive even of the meanest living. The

great trouble most of the time is that the employee and the employer are kept apart purposely, in many cases by "professional friends of the workingmen," who make a good income by "playing" one against the other and by collecting fees from both. Remember, I am not condemning all labor leaders nor labor organizations. I am merely advocating that we teach the employee to reason out his problems so that he can know when he is being exploited for the benefit of others who throw him a crumb now and then, while they eat the richly-buttered slice of bread. I think all of us realize that we are approaching a better brotherhood of mankind than has heretofore existed, and we must understand how to make the most and best of it. I could say much more about this phase of my subject, but I think you appreciate the idea I want to convey, and time presses.

Upon all married male patients we want to impress most strongly the importance of ideal fatherhood. This means having a reputation beyond reproach as a husband and citizen, both within and without the home. It means that he takes the trouble to see that his language and actions are such that the children will get naught but the highest ideals to pattern after. It means that, being careful to set a high standard for the children, the father improves himself and everybody with whom he comes in contact. In this way our present and future citizens are well educated. Of course, strict morality need hardly be mentioned as a very necessary part of the good example.

Upon your unmarried male patients impress the necessity of the forming of good habits and ideals at the earliest possible moment, if their childhood training has been neglected. Take the time and trouble, for their sakes and your own, present and future, to show them what is best in life and the difference between sham and reality. It is the duty of every physician to endeavor to impress upon the growing and grown male the enormity of the crime of belittling the sacred marriage relation, and of debasing and defiling the sex of his mother and sister. By doing so you may be saving your own daughter, for who knows what may be her temptation in life at some time or place. No nation can survive, much less advance, where the sexual relation becomes a mere commercial transaction and a so-called pleasurable pastime. No nation is going to have future good citizens of the highest type where prospective mothers are to be ravaged by the diseases contracted by their husbands during their prenuptial dissensions.

pations. You should not forget to advise all men to undergo a thorough medical examination as to the health of their sexual parts at least before marriage. You hardly need to be told why.

You can all do this missionary work, no matter in what branch of medicine you are interested. Personally I am working in orthopaedic surgery and paediatrics and find plenty of opportunity. Any man who so desires can find both the time and the opportunity. The public are in a receptive mood, and I base this conclusion upon the fact that when giving my two courses of public lectures, "Ten Sex Talks to Girls" and "Ten Sex Talks to Boys," I have audiences which usually tax the capacity of the hall in which I am speaking. I have further based my conclusion on the fact that when I published these lectures in the *New York Medical Journal* and *Pædiatrics* respectively, and still later on in separate books,² one for each sex, I received many flattering letters and notices from every point of the compass. It would seem that upon the sanctity of the home would rest the future of our nation, and it is our duty as good citizen-builders as well as conscientious physicians to fight immorality wherever and whenever we find it. It is not enough to endeavor to cure the results of it, for here may it be most truly said that "an ounce of prevention is worth a pound of cure"—and do we ever really cure?

To your married women you will discuss that which makes for the ideal wife and mother, for it is the wives and mothers that are the real bulwarks of every nation. I think we should decry in the strongest possible terms the tendency of many women to avoid motherhood. We know the various preventives against conception that are in vogue, and we know how health-wrecking many of these practices are, therefore we should not hesitate to enlighten our patients upon this phase of the subject. Because some women wish to evade the carrying out of their duties to the human race, we can hardly afford to have a nation of nervous wrecks. Your patients must understand that their lives cannot be one grand round of "good times," with no responsibilities. Those who have children must be made to realize that their offspring belongs to them and not to the nurse-maid, and that, therefore, to give the child, its needs and its guidance, over to the care of a stranger, so as to be able to carry out social pleasures and other supposed duties,

²J. B. Lippincott Company, Philadelphia.

is nothing short of criminal towards both the child and the nation. Who or what can be more important to the mother than her child?

Just as we would endeavor to teach the father his duties as husband and father, so we should try even harder to make wives and mothers realize their responsibilities. We cannot labor successfully with the growing child or make much headway if many of the very things we protest against and teach as wrong are practised by the mothers of the very children we are trying to lead to higher ideals. I have had some experience of this kind in conjunction with my public lecture work, and know whereof I speak. We are going to see, I am afraid, some very unpleasant things in a not very distant future unless many of the tendencies of the present-day women are checked. I do not wish to pose as either evil prophet or inspired alarmist, and I ask you to verify my remarks for yourself by looking about you and noting what is to be seen. The duty of the wife is the care of her husband and the home-making in conjunction with her life partner; the duty of the mother is the care of the children, and she cannot fulfil either of these duties with any degree of perfection if she is constantly absent from the home in both thought and person. We all agree that proper pleasures and relaxations are necessary and should be indulged in, but we should firmly set our minds against any excess, and should insist upon the total abstinence from any that may be deemed questionable. Again I say to you, look about you and see what you would correct in your upbuilding of the standards of good citizenship.

To the single girl who is your patient, young or old, there is much to be said regarding many things. Perhaps a little heart-to-heart talk on her main mission in life—wifehood and motherhood—would be the most important. Teach her the great holiness of marriage and the absolute sacredness of the marriage relation. How marriage founded on anything but the purest and deepest of mutual love is debasing, and not very much raised above licensed prostitution. Children of such marriages are not liable to be very good material for the making of a very superior class of citizens. Teach her the proper care of herself at her menstrual periods, and how modesty and personal purity are invaluable jewels. Teach her the value of always acting in the proper way, never permitting the slightest familiarity in either talk or actions from the opposite sex, or from her own sex, for that matter, either. Teach her the dangers and other undesirable conse-

quences of either solitary or mutual masturbation. This is very important, for masturbation is remarkably prevalent among young girls and children, as well as among growing boys. We all know it is neither a healthy nor an elevating practice in either sex, and should be most carefully guarded against. Teach her the value of having a mind of her own, not permitting the so-called makers of fashion to make an immodest freak of her, nor to cause her to ruin her good complexion by paint, powders, rouges, and other cosmetics. Let her understand the value of being just her natural self. Remember, in all your dealings with her, that not only is she a citizen of the future, but that she is to be the mother of future citizens, and therefore her ideals must be of the highest if we are to get the best results from her and her progeny.

The little children of both sexes are perhaps, after all, the most important of those we have to work with, for it is easier, perhaps, to influence the young, as we have less to undo than in the cases of older persons. Of course, even with them we need the help of the home, otherwise our efforts will be more or less nullified, lacking this coöperation. To them little talks in simple language, not as lectures, but more like ordinary conversations on various topics which will tend to mould their characters along lines worth while, are what are to be recommended. Let them notice that you are on the lookout for poorly-kept teeth, unwashed hands and faces, unbathed bodies, unmannerly acts, improper language, profanity, untruths, bad habits, and things of like nature, and that you are quick to compliment them for things well said or well done, and you will be surprised to see not only how they will try to win that praise, but how you will have gained their goodwill and confidence—a very great necessity in dealing with children if you would get good results. Do not forget to warn the parents of both girls and boys to be on the lookout for typical or atypical masturbation, a something which is only too prevalent among even small children of both sexes, and which fact, if recognized more by some of the members of our profession, would clear up many obscure and puzzling diagnoses and bring about quick cures in what have been long and unsatisfactory cases.

Time presses, so I shall not say anything more on this subject of citizen-building, about which an entire book could easily be written. I ask your indulgence for having perhaps taken up more time on your

programme than I should have done, but in extenuation plead the real importance of my subject, as it concerns not only us, as both physicians and citizens, but our nation in general; and I ask your future coöperation in spreading the fact of the need of such work, and in the active participation. You can all give public lectures to audiences whom I am sure will appreciate your efforts in their behalf, and other lecturers in public work will, I am sure, be glad to have you use their lectures if you feel you are unable to write some for your own use. Any who wish to give lectures on sex hygiene are welcome to use either of my series, in full or in part, and I shall feel complimented by this sign of their approval. I thank you for your patience while listening to this non-medical paper, and I trust my effort to awaken in you the importance of this work has succeeded and will bear fruit.

THE ADVANTAGES OF A LIBRARY TO A MEDICAL SOCIETY *

BY J. C. WILSON, A.M., M.D.
Philadelphia

Members of the Berks County Medical Society.—GENTLEMEN: It is a great pleasure to be with you to-day to take part in the dedication of your new home and the housing of your library. I deem myself fortunate to be the bearer to you of the greetings and congratulations of one of the oldest medical societies in our country, organized in 1787 and chartered in 1789, and the possessor of one of the great medical libraries of the world, having on the shelves of its splendid stack-room to-day more than 100,000 bound volumes—the College of Physicians of Philadelphia. I bring you likewise the greetings and hearty congratulations of the Medical Library Association.

Speaking as the president of one of these medical bodies and an ex-president of the other, I may tell you that your secretary's suggestion that I should say something to you about the advantages of a library to a medical society was most welcome. In the first place, it provided me at once a theme for my little talk; secondly, it gave a subject with which I am familiar; and, in the third place, it supplied a topic concerning which any trained librarian will tell you that I have no technical knowledge whatever. That is what I like about it. I am enabled to meet with you on common ground and chat with you about a subject of mutual interest in which we alike have a layman's ignorance and a layman's eagerness to know, hoping, as Rosetti says in that mystical poem called "The Blessed Damozel," to

" . . . find some knowledge at each pause
Or some new thing to know."

In this spirit we shall not be too precise or orderly in our discourse, nor trouble ourselves to make a display of learning which we do not possess.

* An informal address delivered at the opening of the new hall and library of the Medical Society of Berks County, Pennsylvania, April 13, 1915.

To save time, I propose to arrange my remarks under three chief headings: the advantages of formation, of maintenance, and of possession. I foresee at once that this classification of topics is open to criticism; that our advantages will not stay within the boundaries which I have set up for them, but will often overrun them and pervade the whole discourse. Nevertheless, some attempt at orderliness is necessary, and the very criticism which I am making shows that the advantages of which I am about to speak are matters of significance and importance.

1. The advantages arising to a medical society and its members from the formation of a library.

The famous Junto or Leathern Apron Club founded by Benjamin Franklin, in Philadelphia, in 1727, out of which came the American Philosophical Society, was restricted to twelve members. For three years it met every Friday evening at a tavern or ale-house, but at the end of that period its sessions were held at the home of a certain Mr. Grace, in a little room set apart for that purpose. It was about this time that Franklin suggested that, as their books were often referred to in their discussions, it would be well, for the sake of convenience, to keep all their books where they met and in this way give each the advantage of using the books of all the other members. The word is the life: not only the spoken word, but also the written word. Books and a place to keep them! Behold the life of a society! For with the books and their housing comes the place of meeting, and the spoken word and the written word are in harmony. More than this of vitalizing influence is in the making of the library—much more. Each member who gives his book or books, be they rare or common, old or new, cheap or costly, experiences a growing interest in his society, a curious sense of possession in its chief asset, and goes about among his colleagues and his friends who are not doctors to get more books or money to buy more. Hence a feeling of good-fellowship in a common cause and a tie of common interest between doctor and patient. It is a fine thing to see the library grow. The citizens share in a very proper pride and find pleasure in speaking of the new medical hall and splendid library. Then, as time goes on, come gifts and bequests and the library grows apace and becomes a power in its community.

2. The advantages arising from the maintenance of a library.

I refer in this connection again to the College of Physicians because it was at first, and has been ever since, a very active medical society, and because its library has always been, I will not say the chief, but a very important factor in its usefulness. At its organization there were twelve senior and thirteen junior fellows. Of the latter, one was dropped from the list probably because he did not sign the constitution nor pay the entrance fee. In fact, he was present at only one meeting. In the early days, as now, there were those whose enthusiasm did not hold out. In 1788, the second year, thirteen meetings were held, the average attendance being 12.2—the greatest number present at a meeting being twenty and the smallest five. You see that the early fellows were deeply interested. June 3 a committee was appointed "to form a Pharmacopoeia for the use of the college," and another to prepare a plan for the formation of a library. This plan, as subsequently reported, was that the secretary and censors should have charge of the library and that the college should annually appropriate from the balance in the treasury at the end of each year such sum for the purchase of books as might be expedient. The fellows were also requested to contribute books to it. John Morgan, the father of organized medical teaching in America, sent, December, 1788, a "donation of books to be added to the college library," consisting of twenty-four volumes—a very generous gift in those days. It is further recorded that, January 6, 1789, he presented some medical books. The plan of the committee was approved March 3, 1789, and the foundation of our great library may be said to have been formally laid upon that day. It was broad and deep, and the edifice built upon it, like a great mediæval cathedral, is not only magnificent but is unfinished in its splendor. Here we have a supreme advantage in a library: it is always building. To the society it is a power, always growing; to the members an inspiration, never flagging. It is in a peculiar sense theirs, built with their means, nourished with their brains, sustained by their energy. It is not only a help to knowledge, but it is also a stimulus to fine traits of character, generosity, intellectuality, mental alertness, broadness of view, clearness of vision, exactness of statement, regard for the opinions of others, helpfulness, responsibility. These traits are not so much developed in the use of books as in the maintenance of a library; for as books are received duplicates must be given away to other

libraries or exchanged. Intelligence in literary matters must be cultivated. Catalogues are to be studied, the needs of readers considered, relative values measured. The opinions of others must be regarded and a sense of proportion as to subjects developed. Very careful habits in the use of figures, prices, and dates must be cultivated. The library is for the use of many, and the opinions of a few in all matters of policy must not be unduly urged. A spirit of helpfulness is nurtured by regarding the needs of other libraries and the sending of books which can be spared, especially to those in the early days of struggle. Finally, a library, and particularly a medical library, calls for a very high sense of responsibility in those who have charge of it: responsibility to the society, to the readers, to the profession. But upon this point it is not necessary to dwell. The facts are obvious. Lastly, the maintenance of a library demands in a large degree the spirit of service—service in many directions, but especially service to the books. It has been well said that we think we own our books; but in fact they own us. We are very slaves to them, to care for them, cherish them, treat them with regard and do them honor in every way.

Is it not then true that the maintenance of a library is educational in a very high degree?

3. The advantages of the possession of a library.

A group of members sat chatting in a fashionable club. Presently the conversation flagged. After a pause one of the older men broke the silence with emphasis: "This club is going to the dogs." "How is that?" "Very simple indeed. Before we got this library, when a new subject came up we talked about it for a week and the time passed very pleasantly. Now some young fellow fetches a volume of the encyclopædia, the whole matter is settled in five minutes, and there is nothing to talk about."

The possession of a library means access to facts—a very noteworthy concern for practitioners of medicine. The selection of books is a matter of great importance, but all books are welcome. Except in the way of mutilated copies and advertising journals and pamphlets, nothing is trash. Even old editions have a value. Some one will unexpectedly ask for a despised and forgotten volume containing some statement of radical importance not elsewhere to be found. Standard works, monographs, essays, addresses, biography, history,

completed files of journals, current literature must all find a place. Not alone the recognized branches of medicine, but all the specialties, even the fads, must be represented as fully as possible. Most important are the costly systems and standard books of reference, the encyclopædias and dictionaries, for which neither the shelves nor the purse of the practitioner suffice. Nor are the collateral sciences to be neglected. The more the searcher after truth finds, the more he seeks. And he appears in many unexpected guises. Therefore in a certain sense the library of a society should be free. Not that books should be loaned to non-members, but that any proper person may consult them. This means a reading-room and a librarian always on hand. It will not be necessary to have a sign "Strangers Welcome." They will know it in other ways. Need I say more to the members of the Medical Society of Berks County concerning the advantages that arise from the possession of a library?

From every point of view the interests of the library of a county society will be furthered at small outlay by connection with the Medical Library Association, and my last word is to heartily advise you to secure society membership in that body—no, not my last word, for I cannot close without again congratulating the men of Berks upon what they have achieved as marked by this fortunate red-letter day.

SANITATION AMONG THE INDIANS

BY LEONARD D. FRESCOLN, A.B., M.D.
U. S. Indian Service, Saltriver, Arizona

THE American Indian has been undergoing a metamorphosis from the primitive savage of the plains to a type of enlightened citizen. Problems of education have been and are being brought to the Indians and at times forced upon them by the whites. Likewise they are gradually being taught the modern views of cleanliness, right living, how to preserve the body in health and how it should be handled in disease.

Now a peculiar problem confronts us in trying to make white civilization fit into the life of these Indians from the standpoint of health and disease. It is agreed that a certain amount of accustoming the body to the elements and "hardening" it is good in protecting the body against disease. It is likewise agreed that the open life, with plenty of fresh air and sunshine, even to the extent of imitating the life of the wild animals in the field, is prophylactic against disease, provided not too much exposure is encountered. But man is a higher animal, and education necessarily brings him into more confined spaces with greater burdens for this nervous system to bear, and disease germs may then take advantage.

It is a well-known fact that the Indian claims the educated white man has brought him tuberculosis and other diseases not known in his camp till the white man arrived. If this be true it is pitiable, and it is our business to permit no further the extreme of a nerve-racking education laden with disease germs to be suddenly thrust at the native from every angle. Why not take this golden opportunity of sanctioning a natural outdoor existence so far as possible, and at the same time teach this people to be clean and industrious?

The age of the "medicine man" is certainly past. You might say among a certain class of neurotic disorders amenable to suggestion the practice of playing upon the imagination by beating a tom-tom and administering a potion in which is bathed the sacred buffalo-stone still has its charms. If you can cure these cases by such means I

suppose you would be justified in pilfering the medicine man's thunder, but don't for a minute longer permit the pitiable old savage or his squaw to remain in the superstition that all disease clouds can be swept away by this kind of medicine. (To the real Indian the word "medicine" means a ceremony.) If you do permit superstition in medicine he will go on drinking pollution from the ditch, refuse to seek medical attention for childbirth, allow his child to bleed to death before his very eyes, and feed infection with added filth.

We certainly can make valuable little impressions by handling this people right. It takes tact to begin with. There are two great scourges now raging in their midst: tuberculosis and trachoma. It has been estimated that there are about twenty-five to thirty thousand cases of tuberculosis, with a high death-rate, and fifty to seventy thousand cases of trachoma to be treated. Vital statistics show the Indian population to be slightly increasing during the last generation. The total United States Indian population is about three hundred thousand, and the death-rate thirty per thousand. Most of us are familiar with what a complex problem is the eradication of tuberculosis among the white race. With the Indians at present this task reaches enormous dimensions. The Indian schools are giving instruction along this line and teaching the children to clean their teeth, wash themselves or be washed, use of Pullman towels, refrain from spitting on the floor, but it is difficult to follow the child home and have him practise hygiene among the older people. The older generation prefers to remain in its overheated hut or dirt-covered wickiup with all its untidiness and squalor, shutting out all the light and air possible, loafing, smoking (especially in the north), and lying exposed on the ground, often with little or no food. All Indians like plenty of food, but they also like to have it given them. As time goes on and the old, uneducated race dies off we can look for better Indians even on their own farms and grazing lands, for, while Indians are reticent and non-communicative, they are not all dull; many are patient, willing, and some progressive; a great many have a good sense of humor, and plenty of them are grateful.

Fortunately there have been built sanatoria for tubercular cases and hospitals for treating this people by the government, but they do not begin to get the many advanced cases that are continually moving and spreading the disease over whole reservations. You can see fresh cases spring up in the wake of those who have gone before. Indians

as a class are not continually spitting, as one might suppose; on the contrary, it is surprising how free from this they are, and it is not hard to train them to use the sputum cup.

Physicians in the service should use a certain amount of well-chosen compulsion in admitting fresh air to the dwelling, giving doses of medicine personally so as to be assured it is taken.

As regards food, it would be wise to have furnished milk, which it is surprising to find in such scarcity even in cattle countries. This would often be of more value than drugs. To be sure, families should be directed to get their own milk from good herds so far as possible, but at present Indians are not equal to the occasion. It is astonishing what poor food the Indian is observed to subsist on, and how poorly it is prepared. In the South beans and tortillas (a home-made barley cake) form nearly their entire diet. Fortunately the Indian will still take an old gun or his bow and arrow and bring in a jack-rabbit or two as a luxury.

It would seem wise to establish separate trachoma schools if we are to get ahead of this affliction. Efforts are being made to have each child use its own towel at school and to place trachoma cases in seats in one part of the room by themselves, but here again comes the problem of dealing with the child at school and the adult at home. It is sad to see the cases of blindness resulting from this disease which could have been prevented. Physicians, teachers, and field matrons should be unsparing in the use of prescribed eye lotions and in putting into practice stringent measures in order to eradicate this disease. They should also use hand antiseptics and protect their own eyes. In many parts of our country the bright sunshine is itself hard on even normal eyes. Dark glasses are provided by the government for use, and they should be dispensed so as to relieve the sufferers. Cataracts and pterygia are common among the Indians, and we trust the time will come when more of them will be relieved.

Impetigo contagiosa is an extremely prevalent disease among the Indians everywhere, and sometimes it causes much trouble. Here is a disease in which you are convinced that it is well to actually treat it in order to get results, rather than outline a course and trust to nature and the family to cure your patient. Pus germs lurk throughout the Indian huts and on their inhabitants. "Clean-up weeks" should be freely inaugurated; clean water and soap should be supplied unsparingly; ammoniated mercury ointment should be used on impetigi-

nous lesions; patients should be segregated as much as possible. Scabies, pediculosis, and allied diseases also abound in some parts, and it takes rigid activity to control them.

Fumigation of Indian dwellings is difficult, but some form can be instituted so as to make headway against infections. Disease will not often cure itself, but attack and prophylaxis will work wonders. Vaccination is being practised extensively in the schools. Where there is any smallpox it is mild. Where there is any typhoid the vaccine will go far to control it, for it is hard to enforce laws of hygiene. The Pimas are, as a rule, a very careless tribe, especially as regards the house surroundings; unfortunately many drink out of the irrigation ditches that have done so much for their soil.

Indians are noted for having good teeth. This is true of many of them. The Mojave-Apaches have excellent teeth, uniform in color and position. The government is doing a good service in giving drills in the care of the teeth and furnishing brushes and powder. The plain food is one reason for such good teeth.

For the next fiscal year Congress has appropriated three hundred thousand dollars for the health of this people. More hospitals are to be erected, and this is wise, as so many Indians will wait for a patient to die, or help him die, rather than volunteer to give him nourishment or even cold water, let alone proper drugs. It has been said that nursing is the main treatment for a disease such as pneumonia, and this is doubly true among the Indians; they need nurses' visits more than once a day. Congress has already done much to better the Indian—if he could only appreciate it—and we believe our government stands for doing right by every one of them.

In southern Arizona the Indians have long been an agricultural people in their simple way. Irrigation has brought better cultivation, with the result that there is a great variety of vegetation throughout the valleys. Among the plants found are naturally many the Indians use as drugs—the gourd for earache and toothache, the ubiquitous mesquite gum for the prevailing sore eyes, the root and bark of the screw bean for wounds, the arrow bush for a face lotion, and the cockle-bur pulp as an application for the eyes. But they are gradually getting away from this sort of *materia medica*. They are building more sensible houses with windows, they are speaking English, and it shows that after all the red man of the younger generation can be noticed to reach towards becoming a better man than his ancestor.

DEFECTS IN OUR PUBLIC INSANE HOSPITAL SYSTEMS

BY EDWARD HUNTINGTON WILLIAMS, M.D.

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OUR insane hospitals have for years been objects of unmerited distrust and suspicion. This distrust is, of course, the result of ignorance, and harks back to the days when hospitals were "mad-houses" and insanity "a possession by demons." But, whatever the cause, the attitude of suspicion exists, and is undoubtedly a tremendous handicap to the progress of psychiatry. Moreover, the feeling of distrust is not confined to the layman. The generality of physicians know very little about insane hospitals or insane hospital methods, and, in a measure, share the layman's indifference to the subject of insanity.

Ignorance is usually at the bottom of unjust or unfriendly criticism. And in this instance an unfriendly attitude is shown by the type of criticism which gloats over the fact that psychiatry has not kept pace with the advances made in other branches of medicine in recent years; or the insinuation that something must be wrong with insane hospital methods or something amiss with institution physicians, since many of the advances made in psychiatry have not emanated from these sources.

The facts underlying such criticism are, of course, undeniable. Moreover, the situation seems peculiarly anomalous when we reflect that practically all the advances in other fields of medicine are made in general hospitals, or by physicians connected with them. But the peculiarly obscure nature of mental abnormalities must not be overlooked; and, in any event, the situation is one of friendly investigation rather than unfriendly criticism. If the insane hospital physicians lag, while the general hospital physicians progress, it is a natural assumption that there must be something radically wrong with the method of conducting our public insane hospitals; for we may dismiss at once the suggestion that there is any difference in qualifications between insane hospital physicians and those on the staffs of general hospitals. But the question as to whether medical

progress is not retarded by the present system of insane hospital management is worth serious consideration, since these institutions are conducted along lines that differ so radically in many ways from that of every other type of hospital.

One of the most striking differences is in the matter of remuneration of the officers. The physicians on insane hospital staffs receive fixed salaries, and are not permitted to enter the field of outside medical competition. Salaried positions do not necessarily stifle ambitious effort, of course, either in medical work or commercial pursuits. But at present the staff positions of our institutions are hedged about by rules and clogged by routine, and the limitations are such that the highest pinnacle of attainment seems a relatively low one by comparison with corresponding possibilities outside.

Moreover, the field of competition for asylum physicians is constricted by the relatively small number of cases of insanity to reach the public hospitals; and even in this restricted field the stimulative element of reward for conspicuous attainment is largely wanting in our institutions. Yet both these elements—the broad field and reasonable certainty of practical recognition—are vital to progress.

The demoralizing effects of these conditions have long been recognized and repeatedly pointed out since Weir Mitchell's classic flaying of asylum systems thirty years ago. Nevertheless, the position of the insane hospital physician has not changed in any really vital particular since that time.

The physicians themselves are not to blame for the shortcomings of their surroundings, however. In this, as in many other features of the management of our public institutions, we see reflected the influence of public sentiment. Theoretically, insanity is now considered a disease by every one; but, practically, the number of persons who grasp the fact that mental aberrations are really diseases in the same sense as somatic conditions is distressingly small. The layman, not the physician, still passes final judgment on many cases of insanity, and, in the last analysis, it is the layman who determines the essentials of insane hospital management; for every public insane hospital is under the control of a lay "board" of some type, whose authority exceeds that of the staff officers.

Very few members of this board have any special knowledge of

insanity or any well-defined conceptions as to what constitutes advanced methods of treating the insane. Their membership is in no wise dependent upon a familiarity with psychiatry; and, nominally at least, their function is "to keep down expenses and see that the voter gets his money's worth." But, in point of fact, the governing board of most public hospitals has authoritative control of every phase of institution life, if it chooses to exercise its authority. And unfortunately most boards are obsessed with the idea that the staff physicians under their control will render the public better service if they are cooped up in public buildings and allowed little contact with the outside world. Thus indirectly the board erects a barrier to progress in psychiatry by eliminating the stimulating elements of contact and competition which make for advancement in all departments of medicine.

No one who has not had practical experience with this system can fully appreciate its demoralizing effect. Institution life is utterly unlike what may be termed normal medical life, as expressed in general or special practice of the profession. The important problems of medical practice are presented from an entirely different angle. For example, the hospital physician is assured a livelihood and a fairly good salary from the start. Thus he avoids one great source of mental distress (and stimulus) which inevitably confronts the practitioner.

Moreover, he has very little actual responsibility; for in perplexing situations he has the guidance of a friendly veteran superintendent. In many ways, therefore, his position is pleasant, profitable, and seductive. But it cannot be called stimulative; for it is hampered by rules, customs, and traditions which have a decidedly narrowing effect. In short, it tends to "institutionalize" the physician—a term that implies narrowness rather than breadth of view.

The physician starting in general practice enters a broad field of unlimited possibilities, but one beset with difficulties that do not confront the hospital physician. His bread-and-butter problem is a mountain; and difficult cases must be solved by his own ability, for he has no friendly superintendent to offer advice. Failure in such cases means shortened rations; success, merely the possibility of a grudging pittance. Nevertheless, these distressing factors are normal stimulants to progress.

In the beginning, then, the position of the young asylum physician is a veritable Elysium, very different from the hard road of the young practitioner. By contrast the hospital physician's road is a broad, smooth pavement—at first. But very shortly its character changes, and becomes narrow and difficult in direct proportion to the ambitions and aspirations of the physician. He soon realizes, for example, that his knowledge of medicine is practically useless in at least eighty per cent. of his cases, which are hopelessly incurable; and even in the remaining twenty per cent. there is little to be done in the way of curative treatment. He alleviates suffering, but his most skilful efforts merely shorten the course of the disease, without really determining the ultimate outcome except, perhaps, in a few special cases.

Furthermore, he is given little chance to exercise his skill upon hopeful cases, as these, very properly, are taken in charge by the more experienced staff members. In short, his energies are largely expended in supervising the custodial care of two hundred or so incurable dementes—duties that can be termed "medical" only by courtesy.

He has abundant opportunity, of course, for studying, if not actually treating, the hopeful cases. But even these recent cases represent a relatively late, and consequently unfavorable, stage of the disease, for cases of mental aberration, now as always, seldom reach the insane hospital until custodial care is imperative, after the hopeful stage of incipiency is passed.

The present system of managing insane hospitals, therefore, although offering its physicians an enviable training in psychiatry, makes it impossible for them to come in contact with psychoses in their most critical and hopeful stage. In effect it is like teaching a carpenter his trade and supplying him with tools but refusing him lumber. Meanwhile the general practitioner, who has neither training nor tools, is given access to the mental lumber yard. And it is only after he has "bungled the job" that the distorted material is turned over to the skilled workman. Little wonder, therefore, that the efforts of the hospital psychiatrist seldom rise above the plane of high-class patchwork.

The situation presented is curiously anomalous, a condition in which the exacting public, in striving to get its money's worth by subsidizing the doctor's time and energies, makes it quite impossible

for the physician to render his best services. This is perhaps the most conspicuous defect in our methods of institution management. But there are other defects in the "management syndrome" that are most unfortunate. The fact that in most of our states the positions on the staffs of the public institutions are obtained and retained by the grace of some personal or political favor, rather than because of individual qualifications, is not conducive to medical progress. Moreover, these positions are usually temporary appointments, and therefore precarious. Thus the staff physician is constantly confronted with the possibility that political wind-shift or personal disfavor may leave him without employment.

Loss of position may be merely a passing incident to the physician who has served only a year or two, but it is a veritable catastrophe to the older man whose habits of life and thought are established. For institutional work gradually unfits the physician for any other kind, and tends to make him timorous and dependent in a manner absolutely without analogy in other fields of medicine. There are, of course, many physicians in the service who rise above its limitations, but these are the exceptions, and the system itself cannot be credited for their accomplishment.

The position of the insane hospital physician, therefore, presents a striking contrast to that of the outside physician in that it becomes increasingly precarious with time, whereas the other becomes more and more assured. Whims and prejudices may increase or deplete the outside physician's source of livelihood, but nothing short of death or permanent incapacitation will strip him of every vestige of income as a pen-stroke may strip the hospital physician. Moreover, in direct proportion to his time of service the field of activity broadens for the outside physician. But precisely opposite conditions prevail in our public insane hospitals. Not that the top rung of the hospital ladder is more crowded, but the rung itself is more constricted, difficult to reach, and at best a precarious pinnacle. Indeed, the possibility of toppling amounts almost to a probability in some states, regardless of the physician's ability, integrity, or record of faithful service.

It will be recalled that three perfectly capable superintendents were recently forced out of one of our Eastern hospitals within a few months, following some trumpery of "influential" persons, political

and otherwise; which indicates that even a highly-developed civil service system offers scant protection. At about the same time the veteran superintendent of a Middle Western institution was dismissed without adequate cause, unless shifting politics be so considered, and a physician appointed in his place who had no training whatever in psychiatry or hospital management. Indeed, according to the new superintendent's own statement, he had "never even seen the outside of an insane hospital." Yet he was placed in control of a hospital staff two of whose members had served several years and were the logical candidates for the position. And similar instances could be multiplied into a volume.

If such cases of injustice merely affected the individuals involved they would be of negligible importance; but in point of fact they affect every ramification of public hospital life, and the effect is most detrimental to medical progress. For no man with sufficient imagination to rise above the commonplace can be obtuse to the possibility of being thrust aside without recourse, and probably without resources, regardless of past services. Few men indeed can exert their best intellectual efforts with this Damoclean sword always poised over their heads.

When it is pointed out, therefore, that the advances in insane hospital psychiatry make a poor showing in comparison with the advances made in general hospital medicine, we are warranted in suspecting that the explanation may be found in the radically different methods of conducting these two types of hospitals. The method of conducting insane hospitals is archaic, reminiscent of the time when these institutions were simply custodial asylums. The general hospital method is more modern and, judged by its results, it is better.

The implication is obvious: we should find some way of modernizing the management of our insane hospitals so that the physician's position will be more stimulative, if we are to expect advances equal to those in outside fields of medicine.

The example set by the general hospital furnishes the "precedent" which is so dear to the legal mind. The physicians themselves would surely welcome the change. And boards of managers, representing the general public, would probably give their approval, particularly if the change suggested would fatten rather than deplete the voter's pocket-book. Moreover, it would be possible to make these

changes without involving any very radical departure from present methods. It would be entirely practical, for example, to give the staff physicians an opportunity to devote a part of their time to outside work after serving a stated period of internship in the institutions. Most of our public insane hospitals are now accessible to some city or town, thanks to modern improvements in transportation, and the sites for new hospitals should be selected, partly at least, for their accessibility. Thus it would be a practical expedient to permit a certain number of the staff physicians to open offices and live in the adjoining cities, devoting a part of each day to hospital duties.

The work assigned these physicians would naturally be largely clinical in character, similar to the work done by the visiting staff of general hospitals, leaving the clerical routine to the resident members of the staff. If these visiting physicians were to devote the morning hours to the wards, let us say, they could care for a large service quite as well as is done at present in most institutions. For, shorn of red-tape and clerical drudgery, the time devoted to efficient medical attendance amounts only to a few hours each day. It is the pottering, unimportant clerical hack-work that eats up the staff physician's time at present.

Of course, these visiting physicians would receive materially reduced salaries, which would be an item having a peculiarly touching appeal to the parsimoniously inclined members of the "board." But in quite another way the institution and the community at large would profit by the arrangement. For these alienists would be brought directly in contact with the incipient cases of insanity, and in many instances would be able to cure the malady and prevent the victims from becoming expensive public charges. Their alertness would also safeguard the public against the ubiquitous crank, whose dangerous eccentricities play havoc periodically.

With such a system in operation it could be confidently predicted that our annual number of assaults and assassinations would be materially lowered. For sooner or later a large proportion of the unfortunates who eventually commit these crimes would come under the observation of these hospital physicians, who would "sense" their defects where the general practitioner fails to grasp the significance of their peculiarities. Moreover, many of these eccentric individuals have a vague insight into their condition in the early stages, and

would gladly seek the advice of an easily accessible alienist; whereas, at present, they religiously avoid coming in contact with the members of an institution staff. The detection of a single case of this form of aberration by the alienist might easily save his community an amount equal to the salaries of the entire hospital staff, to say nothing of the saving in human life.

These features, therefore, should be attractive to the community from the fiscal standpoint. From the physician's point of view there are features equally attractive. He would be given a broader field for applying the knowledge that he has acquired by special training, but which is now largely wasted by his enforced confinement. He would also be brought closely in contact with the broader fields of medical thought and practice, which would keep him out of the distressingly narrow rut of present-day "institutionalism." And, finally, as his grip tightened on outside conditions, he would shake off the depressing mantle of dependence upon somebody's whim which is the bane of institution life. The feeling that one can snap his fingers in the face of unjust critics is wholesome and conducive to mental uplift and progress.

Our present conception of the causes of psychoses is that they are frequently dependent upon physical abnormalities. The successful alienist must be familiar with somatic as well as mental maladies. But the institution physician at present is not brought in contact with physical diseases to any extent, and thus loses touch with the fundamentals of his profession. This is an additional reason, and a vital one, for bringing the hospital physicians more closely in contact with outside conditions.

These companies of trained alienists scattered across the country would span the gap between theoretical and practical mental hygiene work and form the connecting link between the various mental hygiene societies and the insane hospitals. By thus joining hands with these societies and the institutions the physicians would act in the capacity of mental clearing-houses, thus forming important outposts for the detection and management of the great army of "border-line" cases.

Some such change in institution management as suggested here would make insane hospital service attractive to many young physicians who now look askance at its narrow restrictions and limited possibilities. It could be made still more attractive, I believe, by

offering inducements to medical students in the interim between college semesters. The distinctive peculiarity of practical psychiatry is the alienist's acquired faculty of detecting mental aberrations instinctively. "To the experienced alienist there is no more suggestive sign of mental disorder than the insane expression, attitude, and manner," wrote Spitzka thirty years ago. And he might have added with entire truthfulness that the best and only way to develop the faculty of recognizing these peculiarities is by close contact and association with the patients. It is in this manner that the intelligent hospital attendant, without any medical training or theoretical knowledge of insanity, often acquires expert practical knowledge about the insane. The medical student could acquire this kind of knowledge in the same way—an acquisition that would be invaluable to himself and of great service to the institution, should he become a member of the medical staff later on.

In some of our public insane hospitals, particularly in the Middle West, this system of offering inducements to medical students obtains at the present time. The positions offered are nominally those of hospital nurses. But special effort is made to permit attendance at autopsies, and an opportunity given to do laboratory work at odd times. Eventually the desirable men who have served this "apprenticeship" are given preference over inexperienced physicians in the selection of staff members. The plan seems to work advantageously all around, the students receiving the benefit of useful training and the institution profiting by their intelligent services.

If this plan were introduced generally, thus making the training in insanity by contact on the wards a stepping-stone to medical staff positions later, and these positions in turn stepping-stones to positions corresponding to the visiting staffs of general hospitals, I believe it would be helpful to psychiatry as well as to the institutions.

I am fully aware that the very suggestion of such a system would have shocked the "institutionalized sensibilities" of many insane hospital superintendents a few years ago. To this type of officer the insane hospital was a feudal castle, himself a feudal baron with whom "hospital discipline" was an obsession. And the greatest possible infringement of discipline in his castle would have been the invasion of the sacred precincts of the medical staff by any person who had ever served in the capacity of mere "employee" on the wards.

Fortunately the "feudal" features of institution life have now largely disappeared. Discipline is, of course, quite as important now as heretofore, but the interpretation of the word is very different. And it is suggestive that, concomitant with this change, have come many others, not the least significant of which is a distinct change for the better in the percentage of recoveries among the patients. Should any one doubt this, let him run his eye over the list of percentages of recoveries of any large institution, such as the Ward's Island Hospital in its mediæval days of twenty years ago, and contrast the percentage lists of that period with the institution's records to-day. It is most convincing evidence.

Judged by their records, then, our insane hospital physicians have made commendable advances despite certain adverse conditions. Such being the case, there is every reason to believe that under improved conditions their advances would be still more rapid. The plan outlined here for making further improvement would be a step in the right direction. It is practical, and, since it involves no very radical departure from existing methods, it should not arouse more than the normal amount of opposition that follows every suggestion of change in institution management.

MEDIÆVAL MEDICINE AND THE FOUNDERS OF MEDICAL REFORM

BY CHARLES GREENE CUMSTON, M.D.

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THE invasions of the barbarous races did away with Græco-Roman civilization, and for ten centuries the human mind sank into a strange torpor. Lost in the midst of these ruins, profoundly disturbed by Christianity, it erred for some time without definite aim. Powerless to discover the right road to follow, it seized with avidity upon all that the preceding ages had collected, and it accepted without question or reserve, with equal blindness and faith, the Evangelists and the writings of Aristotle and Pliny. To discuss them was unthought of, but the inherent need of discussion common to mankind was not extinct. Far from it, for more than ever was argument prevalent, but merely as to words. Ideas were carefully avoided, and the sterile quarrel of the Universals was sufficient to fill the Middle Ages with its empty phraseology. Under these circumstances the human mind was quite incapable of devising anything of value or durability, and, therefore, it is not surprising that medical science, during this unhappy period, made no headway. In point of fact, it receded, and it can be truly said that Hippocrates is much nearer to us than to the physicians of the mediæval period.

It was not for the want of doctors at this epoch, nor for works on the healing art, but, here as elsewhere, the fearful intellectual perversion of the mediæval days made its deplorable effects felt. The Bible prohibited physicians from dissection, and this was replaced by commentaries either of the Greek texts, which were almost always altered, or those of the Arabs, but never did it occur to any one that Galen or Averrhoës could be wrong, and later on, when Vesalius demonstrated that the anatomical descriptions of the former could not be applied to the human body, the faith in him was so deeply rooted that it was supposed that the structure of man had changed!

More than anatomy, pathology and therapeutics became lost in these mystic dreams. Since disease was due to the wrath of God and the various saints, the only rational means of cure was by prayer and fasting; but the kings of France, who received their power from God, had the privilege to cure by the royal touch. Pilgrimages were also in high esteem, likewise benefactions to religious establishments.

But it often happened that the unfortunate patients experienced no relief, and, despairing of all hope from divine clemency, they gave themselves up to the devil, who played a very prominent part in mediæval times. They consulted sorcerers, who were everywhere, and thus may be explained the peculiar practices of the *Concilia* of the epoch and whose favor was great. For example, for a poisoned bite Guainorus advises removing the feathers from around the anus of a hen and then place the anus over the area of the bite, at the same time holding the bill closed so that the bird will aspirate the poison by the anus.

The mediæval ages have left us admirable architectural monuments, but we are not so favored in the natural and medical sciences, and we must come to the sixteenth century, at the time of the publication of Bacon's *Novum organum*, before the experimental method became known, and which is the only true source of progress. Medicine was the first to adopt the method of observation, and there were some physicians in the Middle Ages whose practices benefited mankind. The names of some of these, with their writings, have been handed down to us, but in order to know the ensemble of science at this epoch it is to the polygraphs, to encyclopædic works, that one should turn. Among these, and which I have selected as typical of the times, is the *Speculum majus*, the work of Vincent de Beauvais.

Little is known regarding the life of Vincent, but he was born about the year 1200 and died about 1264. A member of the Order of St. Dominic, he was attached to the royal family, in the capacity of professor, before the year 1248, and was the councillor of St. Louis. This position allowed him to procure the necessary materials and collaborators for the writing of his work. I shall refer in this paper merely to that portion which treats of the healing art.

Printed for the first time at Strasburg in 1473, in ten volumes in folio, the *Speculum majus* enjoyed a great popularity. Numerous

editions appeared during the fifteenth and sixteenth centuries. The historical portion of the work was translated into French near the end of the fifteenth century, and again in the sixteenth century several editions appeared.

Generally speaking, all scientific works of the Middle Ages were of the nature of an encyclopædia, and such are the works at the beginning of the thirteenth century by Albertus Magnus, St. Thomas, and, later on, Brunetto Latini and Vincent de Beauvais. They were the successors of, but with a larger mental view and possessed of greater knowledge than, Isidor, Bède, and Rhabanus. They wrote encyclopedic works and not vocabularies, and, although they did not have the originality of later medical writers, they, nevertheless, have been of great service to posterity by the summing-up of their subjects, and thus have helped to establish the limits of certain epochs. Likewise—and this should be remembered—they frequently were the echo of books lost to us or of doctrines which had been forgotten in the course of time.

It is hardly necessary to say that during the Middle Ages there is not to be found any encyclopædic work containing much, if any, progress in the medical sciences, diagnostic methods, or heroic therapeutic measures for the same afflictions prevalent then as now. Besides the work of Hippocrates, Celsus, and Galen, the men of the Middle Ages were familiar with the medical writings of the Arabs. Littré has, in *L'Histoire littéraire*, vol. xxi, published some remarks on a few physicians of the thirteenth century who have left some of their writings. In the first place comes Simon of Genoa, who died about 1300. He wrote a work entitled *Clavis Sanationis*, which is, in reality, a book on medicine and botany. He is also supposed to have put into Latin several Arabian works on medicine, one by John, son of Serapion, another by Bulchasi ben-Aberazerin. In this translation he was aided by a Jew of Tortose, named Abraham. This same Jew is referred to in the title of the *Liber servitoris*, treating of the preparation of simple medicines. This opuscule was printed at Venice in 1471 by Nicolas Jenson, a French printer established in the city of the Doges, and carried to such perfection the Roman character that he has been said by some to have invented it. The first volumes were printed in Gothic characters. Jenson was master of the mint at Tours, after having been an engraver at the Paris Mint.

guarantee had been given. Here is a copy of the letter to the king, written upon this occasion:

"*Notre souverain seigneur, tant et si très humblement que plus pouvons nous recommandons à votre bonne grâce; et vous plaise scavoir que le président messire Jean de la Driesche nous a dit que lui avez rescript qu'il vous envoyast Totum continens Rasès pour faire escrire; et pour ce qu'il n'en a point, scachant que nous en avons un, nous a requis que lui voulussions bailler.*

Sire, combien que nous ayons gardé très précieusement le dit liere, car c'est le plus beau et le plus singulier trésor de notre Faculté, et n'eu trouvet-on guère de tel, néanmoins nous, qui de tout notre cœur désirons vous complaire et accomplir ce qui vous est agréable comme tenus sommes, avons, délivré au dit président le dit livre pour le faire escrire, moyennant certains gages de vaisselle d'argent et d'autres cautions, qu'il nous a baillé en seureté de nous le rendre, ainsi que selon les statuts de notre Faculté faire se doit, lesquels nous avons tous jurez aux saints Evangiles de Dieu garder et observer, ne autrement ne les pouvons avoir pour nos propres affaires. Pariant Dieu Sire ce 29 novembre 1471."

Human anatomy is treated in the *Speculum majus* in the section on the philosophy of nature, while medicine is placed in the doctrinal part, which comprises all the arts and sciences. The books particularly given up to medicine are the libri xii, xiii, and xiv of the second volume. The author, in the first place, outlines the duties and obligations of the physician, those resulting from moral law, and the positive prescriptions of the Church. He who would give himself up to the practice of medicine must endeavor to procure health for his patients. His science should serve his patients, but he must not make bad use of it; he must abstain from performing abortion, must not teach others the use of dangerous substances, and must keep aloof from those who thus teach. It is quite unnecessary to add that discretion is admonished as one of the first and imperious duties of the physician.

From the pen of a monk at an epoch when the majority of physicians were ecclesiastics, it is not at all surprising to find advice to flee from the pleasures of the times and to avoid drunkenness. The knowledge of the physician should be universal, and, besides grammar, geometry, rhetoric, and astronomy, he should be versed in music,

for cures have been wrought by it, as in the case of David, while Asclepiades, by a symphony, gave back reason to a maniac.

But what the writer of the thirteenth century upholds is hygiene, and from the viewpoint of prophylaxis he says: "*Defensio denique omnis atque munitio qua nostrum corpus adversus externos ictus casusque servatur.*" This was rigorously applied to prevent contagion from lepers. Preserve health, restrain the onslaught of disease and death, is the part to be played by the physician, according to Vincent de Beauvais. Health may be disturbed by internal or external factors, and in the latter are to be placed trauma and the influence of the community in which one dwells; and a long, detailed chapter is given on the rules of health for the different seasons of the year, as might naturally be expected. His advice on the dietetics of babes and children is sound and, I may say, quite up to date, although de Beauvais does not give us receipts for milkless milk, such as are ordered by the twentieth century physicians.

Speaking of the traveller's hygiene, our author advises those taking a sea trip to eat little, and I here quote his words for the care one should take when travelling on foot: "*Accidit autem peregrinanti copia pediculorum in corpore propter sudorem et pulverem ac balnei paucitatem. Quod cum evenerit corpus ejus cataplesmetur cum argento vivo cum oleo, adjuncta Aristolochia lunga et dejela. Mane quoque balneum ingrediatur et corpus ejus picatione valida mundetur, caputque cum tarafablitio et boraco lavetur.*" I would point out that the use of mercury in oil was the same in the times of which we are speaking as the gray oil of modern times.

It is hardly necessary to recall that leprosy was rampant in the Middle Ages, and the *Speculum* gives the following treatment for this disease. An early interference may check the affection, but when the limbs are involved and the face disfigured a cure cannot be expected. One should be on the lookout for the early symptoms. These are a haziness of the conjunctiva, a hoarse voice, and a fetid perspiration over the entire body. The face swells, and takes on a reddish hue, then nodes appear and the eyebrows fall off. One should hasten to act by bloodletting from the right arm. A diet of buck's and goat's meat should be ordered, with a light wine and baths every day. Then the patient is to be bled from the left arm and the above-mentioned diet continued. Work should be avoided, likewise anything that may

tend toward melancholia. If the patient be seriously afflicted with disease the flesh of vipers is indicated.

In treating diseases the writer refers to them according to symptoms and not to the lesions, and this is clearly what one should expect, because at Montpellier, even as late as the fourteenth century, the magistrates of the city were obliged to give only one body of a criminal during the year for anatomical demonstration. Pathology, it is quite needless to say, was unknown, while normal anatomy was most incomplete and imperfect. In all this de Beauvais, like others of his time, blindly follows the teachings of Galen, and the same may be said of his physiology.

For the diagnosis of disease the pulse and urine are alone considered. As to the diseases examined by de Beauvais, it may be said that their description is, on the whole, good, but the etiology is, naturally, fantastic.

Phthisis gives rise to fever coming on towards night, while a free perspiration weakens the patient. The eyes become sunken, the cheeks flushed, and the fingers become thin. Appetite diminishes and a hectic fever appears. De Beauvais also points out that phthisis comes on after a pleurisy in many instances.

For diseases of the liver one should abstain from wine when there is fever. Little is said of surgical disease, and there is question only of bloodletting and the application of blisters. A distinction is made between simple and compound fractures, and what is said of the repair of simple fractures is in general correct from the modern viewpoint.

The *materia medica* of the *Speculum* is that of the epoch, and the substances are divided into metals, plants, and animals. Some of the preparations really have some therapeutic value.

In spite of the then reigning theories and the philosophy of Aristotle, medicine, from its very nature, was of necessity looked upon as an experimental science, and after the thirteenth century Guy de Chauliac made advances in surgery. Later, lithotomy, in expert hands, gave happy results. Ambroise Paré came upon the scene and revolutionized the practice of surgery. The opening of dead bodies became more and more frequent, so that with Vesalius, Columbus, and Fallopius, not to mention others, positive science took the place of the theories of scholastic philosophy. Then Bacon

gave to the world the true scientific method and indicated the aim of science in his *Novum organum* and his treatise *De Augmentis*.

As I have already said, at the end of the sixteenth century the human mind regained consciousness. Numerous works of antiquity were found lying on the shelves of libraries, and the printing-press spread them by thousands, and this breath of a new life at last opened the eyes of the world at large. Great was the strife between the old and the new thought, and it may be said that in no branch of learning was it keener than in medicine. Numerous and ardent were the defenders of Galen, Hippocrates, and the Arabs, because they had been placed upon such a high pedestal that it was hard to destroy what once had been adored. Then, too, it was with regret that one gave up so sure a guide as Galen, and in the acquisition of the truth many difficulties were encountered, particularly in anatomy. Once in a while the Faculty could obtain a body for dissection, but this was denied to most of the students. They heard the disputes of the masters; they heard Vesalius pretend that Galen had dissected only monkeys and that his descriptions could not apply to man. On the other hand, Sylvius (Dubois) was of opinion that Galen was the one who knew the truth, and considered his description of the human anatomy perfect.

But it was quite impossible for a student to form an opinion under these circumstances. It was necessary that he himself should dissect or, at least, witness dissections, and at Paris, if he were lucky, he might once in a great while behold the opening of a body. The first anatomical amphitheatre at Paris was built in 1604, at the old school, Rue de la Bucherie, but before this date it was indeed a rare occurrence for a body to find its way into the miserable building that was the Medical School.

The registers mention a mass in 1493 in honor of an individual whose body was opened in the presence of the students, while on March 27, 1526, Jehan Despatures, hanged by the executioner, was publicly dissected, and from time to time, though rarely, a corpse was handed over to the school. It should also be remarked that when a body was given the professors and regents appropriated to themselves the lion's share and dissected privately at their leisure, so that the students were deprived of the opportunity of learning. Sylvius states in his works, which appeared in 1555, that he privately dis-

sected the body of a mason who had been killed by a fall, a woman who died from labor, and a young girl who died from a "scirrhous" disease. Then, too, if one is to judge from the engraving in the *Humani corporis fabrica* which represents Vesalius giving a lecture, the student could profit very little from the demonstration, as he is surrounded by some privileged persons who completely obstruct the view of the students. For these reasons one may readily understand why the students preferred the ancient method of Galen of learning anatomy, who was so clear and who always explained the use of the organs, and, likewise, one can understand their hostile attitude towards the innovators who upset their method of working and rendered their task more difficult. They quite rightly asked where all was to end, and if this reckless method was to be applied to all knowledge. Aristotle was beginning to be doubted, and Rabelais was bold enough to say "*Devant cette audace de l'homme: les Dieux ont peur.*"

The old Sorbonne trembled! And to this struggle may be added another involving all the interests which were disturbed by the new doctrines, the resistance of the quacks and other miserable peddlers of nostrums, who saw their castles crumble away and their business on the verge of ruin. How true it is that one can never attack ignorance with impunity!

Among the partisans of the old thought the Faculty of Medicine of Paris held the first rank, and in spite of Vesalius's work, which had appeared at Bâle in 1543, and that of Estienne, in 1546, at Paris, entitled "*Dissection des parties du corps humain,*" the School of Paris retained Galen's teachings and proclaimed his infallibility.

Jacobus Sylvius (Jacques Dubois) was the most original representative. Born at Amiens in 1478, he died in 1553. According to his biographer, his life was calm and peaceful, it having been disturbed upon only one occasion, this being the publication of Vesalius's work on anatomy. The latter had been a pupil of Sylvius for three years, and his *Humani corporis fabrica* was certainly a wonderful production. Then, too, Vesalius was young and ambitious; he criticised several of Galen's statements in such a harsh manner that, in reality, he harmed himself more than he did Galen.

On the other hand, Sylvius was so attached to Galen and Hippocrates that his admiration for them blinded him, while his hate for Vesalius deceived him and led him away from the truth. Cornelius

Boerodorpious, first physician to the emperor, and some courtesans jealous of Vesalius and irritated by his arrogance, incited Sylvius to uphold the authority of the ancients against the calumnies uttered by the young doctor of Brussels. It would be useless to here repeat the controversies between these two great men, as a detailed account will be found in Sylvius's letter to Vesanum; in that of Vesalius, entitled *De china nadice*; in the one to Vesalius from Franciscus Puteus; in the letter of Renatus Henerus to Sylvius; in the anatomical observations of Fallopius, and in the apology of Puteus by Gabrielle Caneus.

The following is quoted from *La Vie de Sylvius*: "Pour ma part, je ne cacherai pas (les mânes de Vésale dussentelles m'en garder rancune) qui si nous n'avions les œuvres de Sylvius, les travaux de Vésale nous seraient éternellement utiles. Et en effet les deux lumières de l'anatomie, André Laurent, premier médecin du roi, et Riolan, professeur, enseignent que Vésale au lieu de disséquer des animaux, comme c'était l'usage, se servit le premier de cadavres humains, sut mettre en ordre la foret des muscles et des vaisseaux et leur donna leurs noms véritables qu'emploient aujourd'hui tous les anatomistes." After giving a description of the person of Sylvius, his biographer continues as follows: "Doné d'un esprit vif, acéré, il possédait une heureuse mémoire et un jugement très sûr: prompt à se mettre en colère, toujours correct dans son langage, ami de tout ce qui est honnête, il était pieux et intègre, sans fraude, ni perfide, ni cruauté. Ennemi acharné des médecins ignorants et empiriques, il était poussé par le seul amour de la vertu."

"Il eut le grand mérite de rendre leurs primitives puretés aux doctrines d'Hippocrate et de Galien. Il combattit aussi l'enseignement des écoles des Maures et des Barbares; mais il estimait cependant Mesué et Gattinarius et recommandait leur thérapeutique à ses élèves: il ne pouvait supporter qu'on attaquât la doctrine de Galien et dans la défense de ses erreurs il se montra si ardent et si entêté que pour cette question seule il se trempa."

Thus briefly is the biography of Sylvius, and I have given it because he was, perhaps, the most noted physician of the sixteenth century, but I am of the opinion that his biographer depicts him in too favorable a light, because, although Sylvius had dissected and in spite of some anatomical discoveries, his writings are filled with most surprising absurdities. Thus, founding himself on the elder Pliny's text,

he asserts that there exists a race of human beings who live without eating! His anatomy is almost that of Galen, and as an example I will transcribe his description of the heart, which is to be found in Chapter XVIII of his works:

"The heart by its flesh forms the principle of life; it contains solid cords stretched between its base and apex; some are straight and cross at a right angle other transversal cords; there are also oblique ones which are placed in the middle of the cavity. The right pillars have as function to draw the blood from the vena cava and the air from the venous artery, and to pass on this air and blood into the ventricles, afterwards forcing them into the great artery, while the excrements and fuliginosities penetrate the venous artery. By the action of the oblique pillars the heart, during the interval of diastole and systole, fills with blood its ventricle taken from the vena cava, while the left ventricle draws the vital spirits from the venous artery."

Here clearly we have a most fantastic anatomy and physiology, but which must have been considered perfect, if one would avoid the insults of Sylvius. The remainder of his anatomy is quite along the same lines, while his pathology is still more strange. However, these are details of minor importance. What was really dangerous for the human mind was not so much the mistakes, which could always be pardoned when an endeavor was made to correct them, as the fearful doctrine professed by Sylvius and his school which had rendered the mediæval ages sterile in results. It was this tremendous principle of authority in the sciences which is to be denounced.

A mind much more free than that of Sylvius, but whom I am not disposed to include among the founders of the renaissance of medicine, was Paracelsus. He was born at Einsiedlen in 1493, and died in 1541, after a life full of many adventures. In my opinion he was not an observer, although he pretended to be a disciple of experience, but in reality it was by observation of the stars that he pretended to cure his patients. He openly declares that he despises anatomy, and that the human brain does not possess the faculties of understanding. These are furnished by the natural light given by the Holy Ghost, which illuminates the intellect and science of his disciples. Let it also be said—and this cannot be denied—that Paracelsus had entire confidence in sorcery, necromancy, etc., which

were so extensively practised during the mediæval ages and renaissance. His writings are contradictory and confused, and, although it is far from my intention to even hint at an analysis of his *Opera omnia chirurgica, chimica medica*, I would like to show in what way Paracelsus understood medicine and that his real status is unquestionably that of a sorcerer of the mediæval period, and not to be included among those truly learned men who reformed medical science during the sixteenth century.

It cannot be questioned but that Paracelsus had numerous successes and a great following, but what does this prove? It is always the miraculous which draws the crowd, even in these enlightened days of Germanic *kultur*. In the seventeenth century Planis de Campy, still impregnated by the ideas of Paracelsus, advised his potable gold as a universal medicine.

What were the causes of his success and the reputation which lingered after him? In the first place it must be admitted that Paracelsus had a most picturesque way of expressing his ideas which readily seizes upon the imagination, and he is often fortunate in the manner of expression. He also had the unquestionable merit of fearlessly attacking the principle of authority, and he violently denounced the practice of charlatans, undoubtedly because they interfered with his own, and I will here transcribe the passage in question, firstly, because it gives an idea of the style and includes curious details on the charlatans of the epoch, and, secondly, because it is humorous to perceive how Paracelsus decries the practice in others which he himself daily employed:

"There are those who mix astronomy with their recipes and use it for their cures; others resort to geomancy, pyromancy, chiromancy, hydromancy. Others, soaring still higher in their speculations, employ narromancy as being more mysterious; that is to say, necromancy or . . . like these vagabonds and patrons of the Mount of Venus who, coming from the place where they learned their art, baptized it in Rhetian rhymes, have sung matins with brother Eckart and eaten red blood sausage and fat sausage with the Dauhutians. Since they have possessed the science of healing beasts and man of all fevers, decaying diseases and other ills, of discovering treasures hidden in the earth, which is no little honor for such venerable physicians. Some employ absolutely no aromatic, no herbs, nor the writings of

Valescas; ordinary paper is sufficient for their recipes, on which they write as disguises the mystery of their art: *ixis pro fixis, tetragrammatas*, Joannes in Dolio, Eod, van ante postque above and below, on the foot and head, making a cross because of fear that the devil would bear away him who painted it. Among the villagers they speak Latin; among the Germans, Italian. Some few among them have received the whip in Italy after having been banished from Germany; others, on the other hand, expelled from Italy, have received the same treatment in Germany."

Thus does this prattle continue through many paragraphs. But one thing we will give Paracelsus credit for, and that is his correct views on syphilis—at his time called *morbus gallicus*. He unquestionably noted that the disease was contagious and that it was contracted during coitus, and, above all, greatly to his credit, that mercury is the only efficacious remedy, and he says: "Every time that you perceive a disease, particularly of the skin, take on an abnormal gravity, be suspicious and carefully look for the French disease."

The above short extract is in striking contrast with the remainder of his enormous work, and one is justified, when confronted with contradictions, in asking whether it be possible to be at the same time so extravagant in ideas and so rational, so foreseeing for the defects of others and so blind in reference to his own. Human nature is weak, but in the case we are now considering the contradictions are so great that I willingly believe that Paracelsus was not possessed of the mind of the savant and made many of his remarks without the boundaries of truth. I am more than willing to believe that he well understood that, when wanting in real talent, advertising may readily attract fortune, and that charlatanism is quite the most propitious means to attain glory and accumulate wealth. He, with cunning, well surmised that probably the crowd always admires that which it understands not, and much prefers false promises and the practices of mysterious charlatanism to the simplicity of the really learned; and, since human nature is, and always has been, the same, this holds good in our glorious twentieth century.

Paracelsus's method was to address himself to the imagination and to strike it by the strangeness of his recipes, and this probably explains his incoherent diversifications. However it may be, whether Paracelsus was a vulgar charlatan or a sincere mystic, but ill-timed,

with some intervals of lucidity, it nevertheless is certain that he is not worthy of figuring among the true reformers of medicine, among those who built the foundations of modern medical science, and my only excuse for giving this unfortunate character so much notice is that, of late, many champions have endeavored to place him upon an undeserved pedestal. This said, let us return to the reform of medicine.

It is not to be imagined that such an important revolution in medicine was the work of a single hand, nor that it developed in a day. Its preparation was slow and the origins were many. The impetus came from above and below: from below the barbers, from above the humanists. Let us consider first the former. In the mediæval times the physician was a great personage who did not belittle himself with minor surgery. He left this vulgar practice to the barber-surgeon, and the latter, on account of his vast ignorance, escaped from the terrible deformity that the scholastic teachings inflicted on the minds of the élite, and he undertook the treatment of surgical lesions in a truly proper spirit and insight. Then we have the brotherhood of surgeons who were familiar with Hippocrates and Galen and also were proof against the mysticism which shrouded the practitioners of medicine. They treated their fracture cases fairly well, all things considered; they knew how to ligate and perform torsion of the arteries in cases of hemorrhage. At all events, a spirit of observation animated them, and the works of Guy de Chauliac and Henri de Mondeville denoted a condition of fairly sound judgment, full of common sense, and there is to be discerned in it some evidence of the beginning of experimental medicine. On the other hand, the general causes of the Renaissance were, likewise, indirect factors of the reform in medicine, particularly the printing-press, which spread abroad the works of Aristotle, Hippocrates, and Galen, all of which greatly influenced the evolution of medicine, while the people were all the better prepared to throw off the tyranny of the ancients because the strife of the preceding century between the Greeks and Arabs had resulted in weakening both.

It was just at this time that the founders of the reform of medicine came upon the scene. As has been said, dissection of the human body was forbidden in the mediæval ages, and Italy was the first to do away with this restriction. At the beginning of the thirteenth

century a royal decree ordered that human anatomy should take the place of the pig at the School of Salerno. On March 7, 1308, another decree was issued giving more details and according a larger number of cadavers. Thaddœus says that William of Varignana, in 1302, and Mundinus, in 1315, opened bodies. Still, in France, the authorities of the Church offered all possible resistance to the practice of human dissection, but after many struggles the School of Montpellier obtained a body in 1376. The date of the first dissection at Paris is not known, and it would seem probable that it took place only towards the end of the fifteenth century. It is also more than likely that the dissections were of little use when one takes into consideration the mental attitude of the Paris Faculty, who admitted only the teachings of Galen.

We must come to the advent of Vesalius and his school to find minds sufficiently unbiased and capable of grasping what they saw. The story of their adventures and the difficulties they encountered has been told so many times that I shall not repeat it here, but I will direct some remarks to Vesalius, not omitting other great men, as Massa, Beranger de Carpi, Fallopius, Estienne, Coiter, Cannanous, Arantius, Eustochi, and others who are now unjustly forgotten.

Far be it from my thoughts to wish to undervalue Vesalius or belittle his well-deserved glory, but I do believe that he has been raised on too high a pedestal by modern enthusiasts, to the detriment of others of his time equally eminent. In point of fact, a vast movement was on foot for some time previously, and the resulting discoveries were a collective work in which it would be difficult to specify the share of each who contributed to it. Assuredly the person of Vesalius looms up before all others, and his great work on anatomy, published in 1543, was epoch-making. Whether or not the plates were drawn by Titien is a question, but it cannot be denied that they are the work of a great artist. The brusque remarks made by Sylvius against his former pupil only enhanced the reputation of the latter and made him more popular. The persecutions of the Inquisition in regard to Vesalius added the martyr's crown to the glory of the *savant*.

The contemporary opinion of Vesalius is well summed up by Coiter in his *Sectiones Fallopi* as follows: "In our day it was Carpus who was the first to bring anatomy into repute; then came Andernæus, Vasseus, Carolus, Stephanus, and Sylvius, who all founded their

writings on Galen. Then Vesalius appeared, whose genius without compare was truly stupefying (*stupendo ingenio*), rendering this art nearly perfect. After Vesalius, Columbus, Valverda, and, above all, my illustrious and revered master, Fallopius, added many discoveries to anatomy. And, lastly, an illustrious philosopher and physician, Bartholomeus Eustachius, with whom I formed a friendship at Rome, gave the finishing touches to the anatomical work, as did Vesalius in his *Examination of the Observations of Fallopius.*"

This quotation clearly proves that Vesalius was the man of the hour in this anatomical school, and it also shows that he was powerfully aided by collaborators whose names have sunk into more or less oblivion at the present time.

Let us next turn our attention to this anatomy that Coiter considers perfect and first consider the method. Charles Estienne, in a chapter entitled "*Administration et dissection de chaque partie du corps humain, proposée en la façon et manière qu'avons observée et trouvée plusieurs fois en faisant incision,*" gives a number of interesting details on the question. In the first place, he outlines the order which should be followed in dissecting the various parts. He says that one should, in the first place, dissect the thorax and the heart; next the belly is opened, the intestine is removed and the dissection of the external parts proceeded with. A description of the necessary instruments and their use is also given. On page 237 of the *Humani corporis fabrica*, edition of 1563, Vesalius also gives a very complete list of dissecting instruments, illustrated by a very good plate. Thus it appears that these were quite similar to those used at the present day, and also that the methods were very nearly those of our own.

The school of Vesalius established the foundation of human anatomy, and osteology, myology, and splanchnology were well described, and, although these great men dissected in the modern sense, there still remained many obscure, or even inexact, points, a circumstance readily to be conceived when one considers the difficulties encountered when dissecting without a guide. But the works of Vesalius, Estienne, and others gave their descendants the means of correcting these errors, and what is of greater importance by far is that the authority of the ancients was shattered, Galen's opinions were put aside, and the great book of Nature was studied. Scholasticism, with its syllogisms, its childish sophisms, its meaningless words, no longer directed medi-

cine, and experience alone would in the future be its source of instruction.

Thus the sixteenth century created the scientific method and partook of its first fruit. It is natural that anatomy should have been the first born in the scientific reform, because it is the foundation of medicine and from it are derived physiology, pathology, and therapeutics, which soon were to develop in their turn. For a time those branches remained in obscurity. It is true that Servetus (1509-53) discovered the pulmonary circulation, but his discovery was hidden in his theological treatise, *Restitution of Christianity*, and, consequently, was passed over unnoticed.¹ Pathology made hardly any progress, and the same may be said of therapeutics.

Surgery, on the other hand, fared better. Already in the fifteenth century Guy de Chauliac and Henri de Mondeville were not unreasonable in their teachings. Ambroise Paré (1517-90) was sometimes even bold in his operations, but was, of necessity, powerless to produce great results, since the antiseptic method was unknown. Nevertheless, fractures, dislocations, and wounds requiring operative interference were properly treated, and most surgeons had renounced superstitious practices so dear to the medical fraternity. It would be unjust, however, to suppose that all physicians gave credence to these. A certain number openly decried them, and among them was one who was particularly profuse in his sarcasms directed to the "folz medecins." I refer to François Rabelais.

It has been forgotten too often that he was one of the most illustrious physicians of the times, because the fame of the writer overshadowed his reputation as a man of science. Born at Chinon about 1483, after having entered the orders, from which he at length escaped, he registered at the Faculty of Medicine of Montpellier on September 16, 1530. A month later, by special dispensation, he was received bachelor on November 1, 1530. He began almost at once the lectures that the new bachelors were obliged to give for a term of three months.

In the early part of 1532 Rabelais left Montpellier for Lyons, where he continued his studies. There he published the second volume of the medical letters of Jean Manardi, under the title of: *Joannis*

¹ NOTE.—A fact not generally known is that Servetus published a treatise on therapeutics in Latin which went through five editions in eleven years.

Manardi Perrariensis Epistolarum medicinalium tamen secundus (Lugduni, Gryph, 1532), and shortly after *Hippocratis ac Galeni libri aliquot, ex recognitione Francisci Rabeloesi, medici annibus numeris absolutissimi* (Lugduni, Gryph, 1532). In 1535 he was appointed physician to the Grand Hôpital, gave public lectures on anatomy, in which he attained great success. In March, 1537, he returned to Montpellier to receive his degree of M.D. on May 22 of the same year. The following year he gave a course on anatomy, after which he left Montpellier.

It must be clearly known that Rabelais continued the practice of medicine throughout his life, and that he was proud of his title. Unquestionably, the medical discoveries of Rabelais are neither numerous nor important, but, on the other hand, I am convinced that his influence on medicine was very great. He contributed greatly toward freeing the human mind of the tyranny of the ancients; he disclosed the gross superstitions of Pliny, and, under the pretext of relating the strange birth of Gargantua, he makes a violent satire on Sylvius and the Sorbonnists, who unreservedly accepted all these absurd fables. When he refers to those who seek the origin of the pox in the stars he is attacking Paracelsus. Rabelais's common sense was shocked by all the ideas of the pedants, and he offers the following theory:

“Le bon Pantagruel étant tombé malade luy print aussi une pisse chaulde, qui le tourmenta plus que ne penseriez. Mais ses médecins le secoururent très bien; et avec force drogues lenitives et diurétiques lui feirent pisser son malheur. Son urine tant estoit chaulde que depuys ce temps là elle n'est encore refroidie, et en avez en France en divers lieux, selon qu'elle print son cours; et l'on appelle les bains chauldz comme à Coderets, à Limons, à Dast, à Belleruc, à Néric, à Bourbonnensy et ailleurs. Et m'espahys grandement d'un tas fols philosophes et médecins qui pardent temps à disputer d'ou vient la chaleur de ces dictes eaux, ou si c'est à cause du bourach ou du souphre, ou de l'alun ou du salpêtre qui est dedans la minière; car ilz n'y font que ravasser et mieulx leur vauldroit se aller se frotter le cul au panicault que de perdre ainsi le temps à disputer de ce dont ilz ne scavent l'origine. Car la résolution est aisée et n'eu fault enquester davantaige, que les dictz bains sont chauldz, parce qu'ils sont yssuz par une chaulde pissee du bon Panagruel.”

It must be recognized that Rabelais was far ahead of his times and that his is a truly modern mind, absolutely free from the superstitions of the mediæval ages. It is to be regretted that Rabelais's irony is so gross, but a century later the vocabulary of Shakespeare is, for that matter, quite as crude and no less obscene.

In closing, I shall quote the lines addressed to the medical profession at the close of the fifteenth century by the Florentine poet, Alfonso d'Pazzi, as they give an idea of the estimation in which the physicians of the time were held.

Al Corte Medico.

*Corte, per cortesia
Lassat'ir in questa nostra frenesia,
E donateci quel, che non vi costa,
Lasciateci mangiare a nostra posta.*

THE CASE AGAINST NEO-LAMARCKISM

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ALTHOUGH the doctrine that characteristics acquired by parents during their lifetime are transmitted to descendants had been almost a biological axiom for many years and had been challenged by few investigators until the late August Weismann published his book on "Heredity" in 1889, yet the opposite hypothesis—that acquired characters are not hereditary—is by no means new, as it is clearly stated in James Cowles Pritchard's "Physical History of Mankind," which first appeared in 1813.

Lamarck's doctrine of the progressive transformation of all forms of life through the effects of use and disuse assumes that results produced on the parent organism while alive are passed on to the offspring, and that they accumulate in ever-increasing ratio in successive generations. Darwin, although he based his theory of organic evolution on natural selection, upheld the Lamarckian principle to some extent as a factor in the evolutionary process, and his hypothesis of pangenesis was mainly conceived with the idea of explaining the method by which modifications undergone by the parent through environmental changes can be transmitted to the germ-cells, and thus lead to their reappearance in the next generation. Obviously, however, no hypothetical explanation of the inheritance of acquired characters can constitute proof that such inheritance actually occurs.

"Acquired" characters are modifications of the body due to environmental or functional changes not inherent in the germ; they are what Weismann calls "somatic modifications in contradistinction to germinal variations," the latter being variations which arise in the germ through causes which are so obscure that we know little about them. There are, of course, very many well-known instances of acquirements, some of them due to environmental effects, such as the sunburned skin of man; others due to the consequence of use and disuse, a particularly familiar example being the well-developed arm of the blacksmith. In practice, however, considerable difficulty exists in determining in individual cases whether a given character arises

from the body (somatogenic) or from the germ (blastogenic). Moreover, as a negative cannot logically be proved in any case, opponents of Lamarck's hypothesis cannot be expected to demonstrate that a certain acquired character can never be inherited. The controversy, therefore, is of such a nature that the instances adduced in favor of the contention of the inheritance of acquired characters must be examined, each instance on its merit. So long as any one can show that another explanation of the cases presented is possible, they necessarily fail as evidence in support of the theory of use-inheritance. The difficulty is to find cases "where the occurrence of selection, natural or artificial, can be wholly excluded."

Elaborate arguments have been made with an apparent semblance of truth that if acquired characters are not inheritable, the whole elaborate fabric of organic evolution falls to the ground, as there would be no means by which the original one-celled organisms could have changed and assumed new forms leading to the more complex and higher stages of life. Further, experiments have been made which indicate that cultures of microorganisms may, under changed conditions, undergo transformations which are maintained through a series of generations, although the inducing conditions may for a long time have ceased. That unicellular organisms are modified under the direct influence of the environment is undeniable, but the inheritance of such modifications is not comparable with that in multicellular forms of life. The change which occurs in the whole body of the unicellular organism is naturally transmitted to the next generation, because this is nothing more than the mother-organism divided into halves—soma as well as nucleus; there is no differentiation between body and germ-cell. A metazoön derived by a series of cell divisions from a single cell is strictly comparable, not to one generation of one-celled forms of life, but to a number of such generations. The process of inheritance involved is, therefore, a different one. Admitting that inheritance of acquired characters takes place in unicellular life, this fact proves nothing when multicellular organisms are concerned. In the case of one-celled organisms, body and germ being one, acquired characters are also inborn characters; the two kinds of inheritance, somatogenic and blastogenic, are not differentiated.

When first the problem of the inheritance or non-inheritance of

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acquired traits was discussed, the custom on the affirmative side was to quote cases of mutilations which were said to have been transmitted. A cat or dog had accidentally lost its tail, and had later been one of the parents of tailless progeny. Some writers believed that these reported instances of inherited mutilations constituted incontrovertible proof of the truth of their arguments. But careful investigation has shown that, up to the present time, none of their evidence could successfully stand the test of scientific examination. Even when mutilation has been practised for many generations, as in circumcision, no permanent effect upon any one, except the individual who was circumcised, has been produced. When we remember that this operation does not cause any constitutional disturbance, we must realize that its consequence, a short prepuce, could not be expected to appear in the next generation. Both Jewish and non-Jewish boys are occasionally born with a limited prepuce, which indicates that circumcision for many generations does not explain the occurrence of this condition in the former. Weismann cut off the tails of mice for many generations without achieving so much as a single short tail in the progeny of the mice upon which he had operated, and the only experiments in favor of the transmission of mutilations are those of the late Dr. Brown-Séquard, the accuracy of which is very doubtful, as Dr. Leonard Hill, of University College, London, England, has repeated Brown-Séquard's experiments on guinea-pigs with a different result. The details are as follow:¹ By dividing the cervical sympathetic nerve a permanent droop of the eyelid can be obtained. When this operation is performed upon guinea-pigs, according to Brown-Séquard, the resulting ptosis is inherited by their progeny. Dr. Hill divided the nerve of six guinea-pigs on the left side, but none of the "children" of these animals inherited the permanent ptosis of the eyelid. He again divided the nerve in twelve animals and interbred them, but none of the young inherited the permanent droop. A temporary droop of either the right or the left upper eyelid, frequently observed in the young, was caused by conjunctivitis, arising from infection of the eye after birth, for the young were never born with the droop. The temporary ptosis disappeared with the conjunctivitis, which was not due to paralysis, but to photophobia, and often disappeared on sudden excitation of the animals. Dr. Hill's

¹ *Nature* (London), vol. 55, p. 161.

experiments appear to indicate that a temporary ptosis deceived so eminent a physiologist as Dr. Brown-Séquard. In addition, one can fairly argue that the cases referred to by the latter are not sufficiently distinctive to afford anything approaching proof of the inheritance of a mutilation.

In medical writings much confusion prevails upon the subject of heredity, and much that is certainly not inherited is referred to as being hereditary. This confusion is largely the result of regarding the individual as beginning his or her existence at the moment of birth, and not until that moment. This is an error. The individual begins his or her existence the instant that fecundation is accomplished, the moment that the nuclear material of the spermatozoon fuses with the nuclear material of the ovum, and the two become one. The recognition of this fact is necessary if the problems of human inheritance are to be studied in a scientific manner. Any disturbance due to influence affecting the individual from without while *in utero* is acquired; it is not inherited. It is an antenatal acquirement, and is, of course, of congenital origin. That alone is inherited which is the property of the individual at the time when he becomes an individual—which is a property of the germplasms from which he originates—or is produced by the interaction of those germplasms. It is to the germplasm, the active matter in the germinal cells, and to the properties of that germplasm, that we must turn to obtain a basis for any sound theory of inheritance. Tuberculosis and smallpox of the newly-born, if they occur, and syphilis in the newly-born, which is not uncommon, are all acquired congenital conditions, unconnected with heredity. I quote from Dr. Adami's article upon "Inheritance and Disease" in Osler's "System of Medicine," 1907, vol. i, p. 22: "There is no such thing as inherited smallpox, inherited tuberculosis, or hereditary syphilis." When these diseases are congenital, they are an infection of the germ, and as the term pseudo-heredity is liable to foster the prevailing idea that they are connected with heredity in some unexplained manner, the writer, in a paper read before the American Public Health Association in 1896, suggested that the term "spermiasm" ($\sigma\pi\epsilon\rho\mu\alpha$ = germ + $\mu\alpha\sigma\mu\alpha$ = stain) might well be applied to the presence at birth of any microbic disease.

Congenital modifications are often acquirements occurring *in utero*; the mere act of birth cannot and does not alter the organic

relationship between body-cells and germ-cells. The foregoing details have been given in order to disprove the widely-held opinion that the presence of syphilis in an infant born to a syphilitic father or mother demonstrates the truth of the neo-Lamarckian doctrine of the inheritance of acquired characters.

The effects usually attributed to the influence of civilized life are believed by neo-Lamarckians to furnish strong evidence in support of their view. Herbert Spencer refers to the myopia of the studious city dwellers of Germany, to the small hands, jaws, and teeth of modern man, and to the thick soles of human feet which are distinct in newly-born infants. All of these features are said to have been acquired as an outcome of modern life, and are passed on to the next generation. The characters in question are without doubt inherited, but are they acquired? As present-day competition does not depend so much upon physical excellence of eye, hand, or jaw as on intellectual qualities, those individuals who have defective eyes, small jaws, etc., have as much chance of surviving as their superiors, which in itself would lead to a greater number of progeny of the first-named types. Or, to put the facts in another way, germinal variations in the form of myopia, small jaws, etc., not being detrimental in the struggle for life, are not any longer weeded out. What Weismann calls panmixia would ensue; that is, deterioration would begin and would continue with the aid of germinal selection until, overstepping the limit, and becoming dangerous to the individual, natural selection would come in as a check. The dwindling of the little toe in civilized man has been attributed to the wearing of shoes, but, as the same condition has been found in India among people who do not wear shoes, this dwindling must be attributed to a natural tendency of the little toe to become smaller,—that is, to germinal variation.

The argument has often been used that the races of men living in different latitudes are what they are on account of the climatic conditions in which they live. Climatic conditions unquestionably have some effect on the organism. That this effect is transmitted, however, is by no means certain. Indeed, abundant evidence can be brought forward in favor of a very different contention, viz., that only such races survive in certain regions as can acclimate themselves to the surrounding conditions. There is no doubt that white men have difficulty in surviving under unsanitary conditions in climates

in which the colored races survive without any great amount of trouble. In a few words, when a character is inherited it does not follow that it was acquired in the first instance. So long as such cases can be explained in this manner they cannot be one-sidedly used as evidence in favor of the transmission of acquired characters.

The cases described above refer to characters unquestionably inherited, but originally not acquired. Attention is now asked to phenomena of the reverse order. Here the characters are certainly acquired, but the doubtful point is whether they are inherited. Instances of this kind are furnished by those cases in which organisms brought into new surroundings become changed, this change being shared by the next generation. Nägeli transferred Alpine plants from their original habitat into rich earth at the Munich Botanical Garden, and found that they changed their appearance, this change continuing for a considerable number of generations. Sea-plants possess certain distinguishing characteristics, such as being more hairy than inland plants, and desert plants have thick, fleshy leaves to guard against evaporation. Although it is true that the characters named are due to the special environment of the plants, and that they reappear generation after generation, and may even to a certain extent be intensified in course of time, these facts by no means prove that the characters are inherited. On the contrary, there is evidence, which will be quoted later, to demonstrate that the same character is merely reimposed on each successive generation as one generation after another is exposed to the same environmental conditions. The evidence referred to is that when Nägeli's plants were taken back to gravel soil they quickly lost their assumed character, and once more presented the appearance of original Alpine plants.² If the acquired character had become part of the individual inheritance, it should have persisted for at least some generations after retransfer of the plants into their normal habitat.

The neo-Lamarckian school asserts that the physique of many city workers in factories is deteriorating in consequence of the unhealthy conditions in which these persons live. There is no doubt that what must be called slum life has a most deleterious influence upon the individual, but no reliable evidence has yet been presented that this bad result is passed on to the next generation. On the other hand,

² THOMSON: "Heredity," p. 184.

the experience of a Michigan physician at the head of a great sanitarium, who has raised and educated a considerable number of children born in unhygienic surroundings, would tend to show that the infants of the slums, if removed when quite young to a sanitary environment, become normal men and women. Children belonging to parents who live in tenement houses are usually subjected from their birth to the same unhealthy conditions of existence as their parents. Further, the underfeeding and overworking of the mother, neither of them uncommon incidents, are likely to have an injurious effect upon the child, even before birth. Congenital weakness in such cases must be attributed to intra-uterine underdevelopment produced by insufficient nourishment, and not to any inherent defect of the germ.

Physicians who pass their vacations in hunting are in the habit of referring to the hunting instincts of dogs as proof that the effects of use are inherited. Dogs are born with traits which are said to have been acquired by their parents, and the argument is used that these traits can be—and are—intensified in successive generations. These points, however, are not nearly so simple as they at first appear to be. Only certain breeds of dogs are fit for definite domestic purposes, showing that there is an innate disposition in the different breeds of dogs for certain kinds of training, which, of course, can be improved in each individual dog by constant practice. Hunting qualities being natural variations in some breeds of dogs, and being merely directed toward certain requirements of the trainer, are, of course, inherited. The traditional fact that constant improvement in successive generations takes place is nothing more than a consequence of artificial selection, for dog-fanciers, in common with other stock-raisers, do not breed from their animals indiscriminately, but breed only from those which are the most satisfactory in all respects.

There exists a widely-accepted belief that the female of any animal when once fertilized by a male of a different breed is spoiled for future breeding, the assumption being that the influence of the first sire extends to later offspring by a second sire. This phenomenon is termed telegony. Many cases are said to have occurred, but, as a rule, the evidence is altogether unreliable. The classical case described by Darwin is, of course, absolutely reliable so far as the facts are concerned, viz., that a pure-bred Arabian chestnut mare bore

a hybrid to a quagga, and subsequently bore two colts to a black Arabian horse, which colts were partially dun-colored, and striped on the legs more plainly than the real hybrid, or even the quagga. The characteristics of the progeny of the second sire, however, may have been due to reversion to an ancestor which that sire did not resemble. The occurrence of quagga-like stripes on horses is not uncommon in England. When they occur they are simply the reappearance of a latent ancestral character, and Darwin's case of telegony is probably nothing more than a remarkable example of reversion. Referring to Professor Cossar Ewart's "Penycuick Experiments" in crossing zebras with horses, Dr. Archdall Reid has expressed the opinion that "telegony has been disproved experimentally, at any rate so far as negative evidence can disprove anything."³

Although both the animal and vegetable kingdoms have been literally ransacked for proof that acquired characters are hereditary, nothing approaching conclusive evidence has been obtained that any single trait acquired during lifetime is ever passed on to the next generation. As such evidence as has been presented by many investigators of high rank is invariably susceptible of another—and usually a more probable—explanation, the only scientific attitude that can safely be assumed to-day is that taken by our great teacher, the late Professor Huxley, when, a quarter of a century ago, he wrote: "I absolutely disbelieve in use-inheritance as the evidence stands."⁴ Neo-Lamarckism is best described as "a lost cause." Professor Francis Darwin, himself a neo-Lamarckian, is said to have applied this expression to it.

³ "Laws of Heredity," p. 76.

⁴ "Life and Letters," vol. ii, p. 268.

THE MALINGERER: A CLINICAL STUDY

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I

THE following study is undertaken less for the purpose of discussing the psychology of malingering than with the object in view of illustrating by means of clinical records the type of individual who malingerers. The opinion is a general one that malingering is a form of mental reaction to which certain individuals resort in their effort to adjust themselves to a difficult situation of life. Being a form of human behavior, it should have been approached, therefore, with the same attitude of mind as any other type of behavior.

A perusal, however, of the literature on the subject, especially of the contributions of the older writers, reveals that with certain isolated exceptions the subject was viewed primarily from the standpoint of the moralist. Even to-day one sees in certain quarters a good deal made—certainly a great deal more than the facts would justify—of the “insanity dodge” in criminal cases. It is true that to-day, notwithstanding the still broadly prevalent tendency to view with suspicion every mental disorder which becomes manifested in connection with the commission of crime, the danger of error in this respect has been reduced to a minimum owing to the more advanced stage of psychiatry, and therefore the practical importance of the subject of malingering is not so great as it was formerly. We find, nevertheless, justification for the further study of this subject in the fact that, aside from its purely psychiatric importance, the more intensive study of the malingerer offers a solution for some of the important problems in criminology. As one of the results of this more intensive study may be mentioned the gradually-gained conviction that malingering and actual mental disease are not only not mutually exclusive phenomena in the same individual, but that malingering itself is a form of mental reaction manifested almost exclusively by those of an in-

ferior mental make-up; that is, by individuals concerning whom there must always be considerable doubt as to the degree of responsibility before the law. As a result of this recognition cases of pure malingering in individuals absolutely normal mentally are becoming rarer every day in psychiatric experience.

The conviction was further gained that malingering as well as lying and deceit in general, far from being a form of conduct deliberately and consciously selected by an individual for the purpose of gaining a certain known end, is in a great majority of instances wholly determined by unconscious motives, by instinctive biologic forces over which the individual has little or no control. This is one of the factors which determines the growing realization among present-day psychiatrists of the extreme difficulty to state in a given case which is malingered and which genuine in the symptomatology. That such views should encounter opposition among our jurists is perfectly natural, threatening as it does with complete annihilation that wholly artificial concept of the "freedom of will" upon which our laws are based.

In touching upon the subjects of "responsibility" and "freedom of will" I incur the danger of adding to the general misunderstanding which still exists between the physician and jurist concerning crime and the criminal.

Speaking from personal convictions, I see no real justification whatever for this misunderstanding, unless it be the difference in the mode of approach to the subject on the part of the two. The jurist is compelled by existing statutes to look upon crime largely in the abstract—not as it concerns the individual who committed the deed, but as it is affected by the statutes covering it. The physician, on the other hand, sees in the criminal act a form of reaction to an intrinsic or extrinsic stimulus by a feeling, willing, and acting human being, and proceeds accordingly to analyze in a concrete manner the forces which brought about this particular form of reaction in this particular individual. As a result of this mode of approach to the subject he is enabled to conceive of "responsibility" as something fluid, something extremely variable, and which may be affected by a thousand-and-one things, and not as something absolutely fixed and invariable and which may be definitely foreseen by a set of statutes.

Any attempt to bring about this most desirable uniformity of approach to the subject of criminology between the jurist and the physician must be based primarily upon intensive study of the personality of the criminal. Such is the aim of this paper.

II

In the last analysis malingering is to be looked upon as a special form of lying, and its proper understanding will necessitate a clear insight into lying in general.

Lying, a very natural and generally prevalent phenomenon, may manifest itself in all gradations—from the occasional, quite innocent “white lie” as it occurs in a perfectly normal individual to the pathological lying exhibited in that mental state known as “*pseudologia phantastica*.” Its proper understanding, however, no matter under what circumstances and to what degree it be manifested, will be possible only through a strict adherence to the theory of absolute psychic determinism.

Lying, like every other psychic phenomenon, never occurs fortuitously, but always has its psychic determinants which determine its type and degree.

Naturally many of these determinants are quite obvious and readily ascertainable. One has only to recall the lying and deceit practised by children. But many others, if indeed not most of them, are active in the individual's unconscious motives and accessible objectively as well as subjectively only with great difficulty and by means of special psychological methods.

The degree of participation of unconscious motives in lying will be determined in the individual case by the extent of repression necessitated because of social, ethical, and æsthetic considerations. It is for this reason that lying is most prevalent and exhibited with the least amount of *critique* in those individuals who either have never developed those restraining tendencies which a normal appreciation of social, ethical, and æsthetic consideration demands, or in whom these restraining influences have been weakened or abolished by some exogenous insult to the nervous system—as, for instance, the tendency to fabrication dependent upon chronic alcoholism or morphinism. A beautiful illustration of the latter type is furnished by General Ivolgin in Dostoieffsky's “Idiot.”

The child's tendency to lying and deceit is dependent to a large extent upon the undeveloped state of those restraining forces. To state, however, that this is the sole mechanism underlying the phenomenon of lying would be to state only half a truth. For it is an undeniable fact that, no matter how strongly endowed an individual may be with ethical or moral feelings, still there comes a time when these are entirely forgotten and neglected; when, finding himself in a stressful situation, the instinctive demands for a most satisfactory and least painful adjustment, no matter at what cost, assert themselves. It is then that the lie serves the purpose of a more direct, less tedious gratification of an instinctive demand. The resort to this mode of reaction, to evasion of real issues for the purpose of gratification of instinctive demands is not characteristic of man alone, but is quite prevalent even in some very low forms of life. We will have more to say about this later. It is an important tool in the struggle for existence among all living beings; it is one of the mechanisms by means of which the weaker inferior being escapes annihilation at the hands of the stronger, superior being.

Malingering, it will be seen later, appears to certain individuals to be the only possible means of escape from and evasion of a stressful and difficult situation of life. The lack of *critique* which permits such an abortive attempt at adjustment and the inherent weakness and incapacity to meet life's problems squarely in the face which drives them to resort to such a means of defence are some of the traits of character which serve to distinguish these individuals from what is generally conceived to be normal man.

The extent to which lying and allied behavior depend upon unconscious motives has never been so well illustrated as in recent psycho-analytic literature, especially in a paper by Brill.¹ This author is so thoroughly convinced of the value of conscious lying as an indicator of unconscious strivings and motives that he frequently asks his patients to construct—artificially—dreams which he finds to be of valuable aid in the analysis of the patient's unconscious. After citing a number of examples Brill states: "These examples suffice to show that these seemingly involuntary constructions have the same significance as real dreams, and that as an instrument for the discovery of hidden complexes they are just as important as the latter. Furthermore, they also demonstrate some of the mechanisms of conscious

deception. The first patient deliberately tried to fool me by making up what he thought to be a senseless production, but what he actually did was to produce a distorted wish. He later admitted to me that for days he was on his guard lest I should discover his inverted sexuality, but it never occurred to him that I could discover it in his manner. That his artificial dreams have betrayed him is not so strange when one remembers that *no mental production, voluntary or involuntary, can represent anything but a vital part of the person producing it.*"

Were this thesis on malingering to succeed in nothing else than in bringing home to our legal brethren this important truth of absolute psychic determinism, that a man is what he is and acts as he does because of everything that has gone before him—because of ontogenetic as well as phylogenetic instinctive motives—it will have fully established its *raison d'être*. For a realization of this truth would at once annihilate from our minds that deceptive notion of the "freedom of will" upon which our laws are based, and will be certain to bring about a more enlightened solution of the problem of the criminal, all attempts at which, we are constrained to state, have thus far* undeniably been huge failures.

The psychic mechanism of lying is the same both in the occasional and in the pathological liar—in both it is the expression of a wish—but the difference in the personalities of the two is a very decided

* Intimate contact with members of the legal profession, both professionally and socially, for some years past has convinced me that the average lawyer still looks upon the ideas concerning crime and the criminal expressed by physicians of a forensic bent as totally unpractical and visionary. It would take only a brief visit to a criminal department of any modern, well-conducted hospital for the insane to convince any fair-minded individual that the physician handles the problem of the criminal not only in a more scientific and rational manner than does one not possessed of this particular training, but also in an eminently more practical manner, even so far as dollars and cents are concerned. I have frequently had patients come under my observation who for a great number of years had been oscillating between penal institutions and hospitals for the insane, in whom each additional sentence did not only fail to bring about the hoped-for reformation, but served to render them more depraved and criminally inclined, and who would have undoubtedly continued this checkered career throughout life, had not their true, unreformable nature been discovered and thus caused their permanent isolation from society, not by the jurist but by the physician. Should reformation ever take place in any of these individuals it is safe to assume that the one who was clear-visioned enough to discover the cause of their anti-social existence would likewise be competent enough to know when this cause has disappeared.

one. On the one hand we have an individual who closely approaches normal man, while on the other hand one who is closely allied to the mentally diseased. The difference between the pathological liar and the habitual criminal, aside from the moral phase of lying, is perhaps but a very slight one, when we keep in mind that in both instances we are dealing with individuals who habitually resort to a form of reaction in their attempts at adjustment to reality which aims at a direct, simple, and least resistant means for gratification. In both we are dealing with a type of mental organization which is primarily incompetent to face reality in an adequate, socially acceptable manner, and therefore has to resort to constant deceit and lying, and in which those inhibitions determined by social, ethical, and aesthetic considerations are equally impotent. The marked egotistic trend which constantly comes to the surface in the habitual liar when he attempts to play the part of the hero and central figure in the most fantastic, bizarre, and impossible adventures is likewise frequently at the bottom of the escapades of the habitual criminal. The two traits are frequently, though by no means always, concomitant manifestations in the same individual.

When, in 1891, Anton Delbrück² published the first comprehensive study of the pathological liar, he not only succeeded in very accurately delineating a more or less distinct psychopathological entity, but also furnished additional proof in substantiation of the fact, well known in psychiatry but as yet unrecognized by the legal profession, that the transition from mental health to mental disease is not a sudden one; that any dividing line which would have for its purpose the strict separation of the mentally sound from the mentally diseased must of necessity be a purely imaginary one, and one not justified by existing facts.

The transition from absolute mental health to distinct mental disease is never delimited by distinct landmarks, but shows any number of intermediary gradations. Nowhere is this better illustrated than in the pathological liar. Here one sees how a psychic phenomenon regularly manifested by perfectly normal individuals may gradually acquire such dimensions and dominate the individual to such an extent as to render him frankly insane.

To endeavor, however, to definitely state where normality leaves off and disease begins would be, to say the least, to attempt some-

thing well-nigh impossible. And yet this is just what the jurist constantly demands of the alienist. The law as it is laid down in the statutes, especially in this country, does not permit of any intermediary stages between mental health and mental disease. An individual, according to law, must either be sane or insane. This point seems to me to be of very vital importance, and I shall have occasion to refer to it again in the consideration of our clinical material.

The part played in lying by disturbances of the apprehensive, retentive, and reproductive faculties will not be discussed here in detail. These undeniably have their influence in facilitating the mechanism of lying. But to attribute this phenomenon wholly to disturbances of this nature would be to assign to it a purely passive rôle, whereas experience teaches that back of every lie are active forces, either conscious or unconscious, which give birth to it and determine its type and degree.

The following two cases will illustrate better than any formal description could what is meant by pathological lying, a psychopathological state for which Delbrück proposed the term "Pseudologia phantastica":

E. W. S., a colored male, aged thirty-two years, was admitted to the Government Hospital for the Insane from Fort D. A. Russell, Wyoming, on January 29, 1912, on a medical certificate which stated the following: "Patient is a native of Porto Rico; has been sailor and soldier; has occasionally used alcoholic beverages, but usually the light wines or beer; is very good-natured, occasionally melancholy and lachrymose; gave a history of 'fits,' and was previously discharged from the army on this account. He was thought to be 'queer' in his organization and had more or less trouble with the men, who made fun of him. He was sent to the hospital from the guard-house in October, 1911, and his mental condition noted at that time. His present symptoms were described as delusions of grandeur: 'Queen Victoria was his instructor in English,' 'King Edward of England was his school chum.' He thinks he was royal interpreter. He does speak a number of languages fluently and, so far as we can learn, with fair correctness(?)'."

On admission to this hospital the patient was in excellent health physically; Wassermann reaction with the blood-serum negative. Mentally he was clearly oriented in all respects and fully in touch with his immediate environment. He comprehended readily what was said to him, and his replies, aside from his extreme tendency to fabrication, were coherent and to the point. Intelligence tests showed him to be intellectually about on a par with the average negro of his social and educational status.

When asked to give his family and past personal history, he recited the following: He knew nothing of his grandparents or parents, and denied having any living sisters or brothers. One brother died in Chicago in 1906; thinks he must

have been murdered, because he himself was almost murdered in November, 1911, when they attempted to assassinate President Taft out in Wyoming. King Mendilic, of Cape Town, Africa, now dead for seven years, was his cousin. The patient himself was Prince of Abyssinia, where he reigned for eight years, having remained in that country from 1896 to 1899, and conducting the affairs of state the remaining five years by correspondence, with the approval of Lord King Edward. He stated he was born in Porto Rico in 1876, and calculates his present age as thirty-four, as this is 1912. About two months ago he received a letter from Queen Alexandra of England telling him he was thirty-two years, ten-twelfths and two days old, or thirty-two years, two months, two weeks, and two days. Asked how much ten-twelfths of a year was, he said: "Three months, three and two days." When told that ten-twelfths of a year equalled ten months, he replied: "The calendar of the English era, which is 'our calendar,' does not correspond with the American calendar, but, being in America, I believe I ought to figure from their standpoint." He left Porto Rico at the age of six; does not know who took care of him up to this time, as he never knew his parents, stating that he was just thrown on the mercies of the country. At the age of six, upon the recommendation and advice of King Alfonso of Spain, he was taken to England by Queen Victoria, who came to Porto Rico especially for this purpose. When asked his opinion as to why Queen Victoria should have taken so much interest in him he stated that he did not know positively, but it may have been because he was related to King Solomon of Bible fame. Requested to explain this relationship to King Solomon, he traces it in the following manner: He was a cousin of King Mendilic, who in turn was the "third reigning seed" or stepson of King Solomon. Queen Victoria, whom he calls "Mother Victor," because she took the place of his mother, sent him to "Hammenotia School" in Oxford University, which he attended for four and a half years, received his diploma, and was transferred to Cambridge College. Here he attended for four years. At the former school he learned the alphabet, went up to the seventh grade, learned some medicine about herbs, etc. "I learned some medicine, not all of it. I didn't practise it much; just practised it enough to do the country good. At that time we didn't have any doctors." At Cambridge he learned "The Reigning of the Thones," or the laws of the country. Upon request he described in minutest detail the city of Cambridge. When asked whether he remembered a large oak tree which grew on the banks of the river flowing through the city, he replied: "I should say I do; many a time I sat on the banks of this river during my student days." Earlier in his student days at Cambridge he learned German, French, and English. It should be remarked here that the patient actually did know a few common phrases in several languages which he picked up during his sailor days. But he always insisted that he knew thoroughly twenty-two languages, and when asked to enumerate these he found himself in deep water and was obliged to invent the languages for the occasion. Nevertheless he stuck to this story, and was always ready to launch upon the task of enumerating his twenty-two languages.

After his four years' sojourn at Cambridge, Mother Victoria sent him to "Saint Palestine," Jerusalem, where he remained for fourteen months, learning the constitution of the country, by-laws, etc. Mother Victoria and Father Edward (Queen and King of England) brought him up so that he could properly reign over Abyssinia. He states that he saw Queen Victoria frequently, and was at her funeral in August, 1910, shortly after the death of Pope Leo. Lord King Edward

died about three months later. The Queen died about the age of seventy-six, as did King Edward at the same age, from grief and senility. Here he adds that his maternal grandmother was sister to Queen Victoria. While at the English Court he held the position of "Prince of Escorts." He left Jerusalem to go to school at Sydney, Australia, for one year. He then went to sea on Lord Edward's naval reserve boat, which he had permission to use. Remained at sea for three years and four months, visiting China, France, Japan, Germany, Austria, Turkey, Italy, Havana, Archipelago. When asked to repeat these countries, he omits some of them and adds others.

He then came to the United States for the purpose of electioneering, stump-speaking, etc., all to benefit the government. He then became a United States interpreter in the Philippines from 1896 to 1902, at a salary of \$75 per month and expenses. He then returned to Porto Rico, where he remained until 1910. Following this he attended the funerals of Queen Victoria, Pope Leo, Lord Edward, and his cousin Mendilic, and finally came to Chicago, where he enlisted as first-class sergeant in the United States Army. He was sent to Fort D. A. Russell, Wyoming, to serve in the Hospital Corps, at a salary of \$48 per month and maintenance. There everything went well until he got to worrying and crying, so they sent him here. He acted thus because he was ill-treated, was not treated right for a man of his abilities, was sworn at too much, and called bad names by the enlisted men. They did this because they were jealous of his "politicalness," his education; he never swore, drank, or gambled like the others did. Was robbed of his every possession in Cheyenne, Wyoming, by members of the Ninth Cavalry and Eleventh Infantry. Lost \$1400 in the past five months in cash and property. They robbed him of his horse, buggy, clothes, and jewelry, including chain, watch, finger ring, a pair of jasper earrings. He could hear them talking about him day and night; feared to leave his room, for he was continually threatened. They were going to kill him. On this account he was taken to the hospital and kept under close guard, because they could protect him. He had to leave at night. He did so after having received a telegram from the Surgeon-General of the Army, asking him to report to the Hospital Corps at St. Elizabeth's Hospital, Washington, D. C. As one of the main reasons why they had it in for him he gives the following: There was a car line running from Fort D. A. Russell to Cheyenne, the fare being ten cents. The men wanted it reduced to five cents. As the one in charge of the canteen he had it in his power to approve or disapprove of this reduction. He disapproved of it because he didn't think that ten cents was an excessive charge for a three-mile ride, especially since they spent so much money on drink, etc. He had a runabout motor car, so they thought this was why he disapproved of it. "In consequence they were on my trail." Part of the way to Washington he came in a private car, but this they deprived him of at Omaha, Nebraska. Perhaps they did this because they thought it was too large for him, but, inasmuch as it was assigned for his private use, they had no business taking it away from him.

During the recital of the foregoing the patient was bright and alert, and his attention was easily gained and very well held. He quickly understood everything that was said to him, and replies were prompt, relevant, and coherent, though, of course, entirely colored by his bizarre fabrications.

During his sojourn at this hospital he was a model patient in every respect, worked diligently with a farm gang, though frequently dilating upon the fact of having the responsibility of the whole gang on his shoulders. On several occasions

he gave evidence of being of a highly sensitive make-up, becoming readily insulted, but he always reacted to these real or imaginary insults in a mild and kind sort of way, always preferring to go out of people's way rather than retaliate. Hallucinatory disturbances were never manifested.

The story of his past life was gone over with him on a number of occasions, but on each occasion he gave a different, highly fantastic recital of his past adventures, always using high-sounding words and phrases and high-sounding names, many of which he mispronounced. Many of the words used by him were of his own coinage, if one were to judge by the sound of them. He was always very pleasant and agreeable, and enjoyed reciting his past immensely. In all these bizarre and marvellous adventures he played the chief rôle and occupied the centre of the stage.

He was finally induced to give an explanation for his extreme love for lying, which he gave as follows: '*It isn't because I don't know better, doctor, but because I think it will make me feel better, that's all. When I tell of all these big things it makes me feel that I am a little above the common herd of negroes, and then I never tell anything to hurt anybody.*'

He stated that he couldn't really separate the true from the false in his stories, and that he seemed to have little or no control over this tendency to exaggerate things and to weave into real occurrences all sorts of manufactured detail. "I know one thing, doctor; that it's been a habit of mine all my life. I have always tried to exaggerate a bit. It makes me feel, for the time being, that I'm above the other negroes, that's all. I know I always try to make an honest living, and this habit of mine never interfered with me."

A good deal more could be furnished from the records of this man's case in illustration of his pathologic disposition to lying. An ordinary negro soldier, he succeeds in projecting himself, by means of his ready and very fertile fantasy, into the most wonderful situations and in rubbing shoulders with royalty. If we inquire into the causes operative here we first of all see in the fabrications of this individual an unbounded craving for compensation for a natural deficiency—in this instance a racial deficiency. What this man lacks in reality he endeavors to substitute in his fantasy. There can be no doubt that the tendency to lie has reached such dimensions and intensity in this man's mental make-up as to make him absolutely believe in his own impossible fabrications, to render him absolutely helpless in the mazes of his fantastic creations. He is assisted in this by his craving for self-esteem, by his extreme need of compensation for a real deficiency, by his ready and fertile fantasy, one absolutely devoid of critique, by his extreme suggestibility, and, lastly, what is of great importance, by his extremely defective apperceptive faculties and consequent falsifications of memory.

The latter defect was particularly well illustrated in the follow-

ing note from my records of the case. He was asked, in the course of my examination, to repeat a simple story known as the "Shark Story," which I shall reproduce here in full for the sake of making clear my point:

"The son of a Governor of Indiana was first officer of an Oriental steamer. When in the Indian Ocean the boat was overtaken by a typhoon and was violently tossed about. The officer was suddenly thrown overboard. A life preserver was thrown to him, but on account of the heavy sea difficulty was encountered in launching a boat. The crew, however, rushed to the side of the vessel to keep him in sight, but before their shuddering eyes the unlucky young man was grasped by one of the sharks encircling the steamer and was drawn under the water, leaving only a dark streak of blood."

In reproducing it he said:

"The son of a Governor of an Oriental steamer was the captain. Now, doctor, I can't think of those little stories. It isn't because I haven't brains enough; it's because I'm so poor a scholar at reciting. I always was. What happened to the captain? That I can't recollect, neither. What happened to the ship?"

Here, instead of answering my question, he said: "Doctor, I suppose you have heard about the big wreck that happened out on the ocean." (This was when the terrible *Titanic* disaster was on everybody's lips and the papers were full of the tragedy.) The patient regularly read the papers. "Tell me about this wreck."

"Well, the steamer was 1200 miles from the land—north-northerly course. It was first reported that 1800 lives were lost; afterwards they found out for certain, through the communication with General Wood, that it was only 1300. Mrs. Zelia Smith, she was on the vessel." (Patient's name is Smith.) "She is Commissioner Hodges's daughter. She was counted lost, for instance, and was found alive. I knew her well; I knew a good many other people on that boat." "About how many people did you know?" "Well, I just only remember some. For instance, Major B——; I knew him well, of course. I dare say I knew all the others, but I knew him best. The boat was in charge of E. C. Smith." "Did you know Captain Smith?" "Yes, sir; I knew him. I didn't know him personally; I only made one voyage with him from Angel Island." "When was that?" "In 1907." "What was the name of the wrecked ship?" "I can't recall that, neither; *Tripoli*, I think it was; she is close on 1500 feet long." "How much money was she supposed to be worth?" "I don't know, sir; there were several heirs who had charge of the ship. She was called the sister-ship *Trinid* and was worth about \$25,000. That, perhaps, may not cover her upper-deck cabins." "Did you ever travel on her?" "No, sir; I never was on her. I was on the *Trinid*, the sister-ship. The White Star people own these boats. I used to run a transport between the White Star Line and the Yellow Star Line." Here he was told that the examiner did not know of the existence of a Yellow Star Line, and he replied: "Oh yes, doctor; you heard of the Flying Squadron that reports all these disasters and signals the other ships."

Thus we see that with partial truths, with facts only partially and imperfectly recalled as a framework, he builds his fantastic tales. He read the newspapers regularly, but could not even recall the name of the ill-fortuned ship, or any particulars about the accident. But what of that?—he could readily fill in the hiatuses with his fabrication. He failed entirely in the attempt to reproduce the story given him, and used the talk about the *Titanic* disaster as a subterfuge—as a ready means of escape from the difficulty in which he found himself.

He himself threw some light upon the part played by his craving for self-esteem in his statement: "When I tell of all these big things it makes me feel that I'm a little above the common herd of negroes." He unquestionably believes in these tales, if they are real enough to make him feel above the common herd of negroes. His suggestibility was well illustrated by the suggested river at Cambridge, "on the banks of which he sat many a time during his student days."

The facility with which his imagination, his fantasy works was demonstrated by the "ink-blotch" test to which he was subjected. This test, in brief, consists of a series of ink blotsches which are shown the patient, with the request to describe them as they appear to him. The following are several of his replies: (1) "A woman sitting on a man, seems like she's got a little weaving in her hand; a little stick, sticking out from the weaving, seems like the man's elbow is sticking out back of the shawl." (2) "It seems to me I have seen a volcano that looks like that. I think it is a ship out at sea. I can see the lifeboats lashed to the side, several ripples of water behind." (3) "A figure of a woman with a hand purse or a disfigured arm near the wrist. Her mouth is open and she is looking around. The wind carried her hat off; she has a muff on her right hand. Seems like there is a neck-piece around the muff."

Notice the detail with which he describes the blotches. In this one ordinary speech seemed to have been insufficient to describe the blotch, and he had to resort to a neologism. "Is that supposed to be a 'perpendicament?' It's got a head like a sea devil; the upper part seems like a peacock trying to peck him in the back of the head."

There remains one other thing to be inquired into in this case, and that is the history of epilepsy which accompanied the patient. He was never observed in an epileptic seizure at the military post from which he came to us, and no seizures were observed in this

hospital. His own statements concerning this are, like everything else he said, quite totally unreliable. But in repeated examinations he persisted in his statement that he had had but one "spell" in his life, but that he frequently suffered from fits of melancholy. In all probability this one seizure was hysterical in nature, phenomena of which type not infrequently manifest themselves in the pathological liar, as will be seen in the next case.

Here one sees how lying, a mental phenomenon which is looked upon as quite a normal manifestation in a great many people, has reached such dimensions in this individual and has succeeded in dominating his personality to such an extent as to definitely remove him out of the pale of normality and place him within the sphere of the mentally diseased.

There is, of course, no question here about the genuineness of his lying as a symptom of mental aberration; *i.e.*, the fabrication as manifested by this individual is something over which he has no more control than the dementia *præcox* patient has over his delusions. In both instances the symptoms are spontaneous and genuine expressions of a pathological mentality. And yet when such pathological phenomena become manifest in association with some concrete difficulty in the individual's life, say in connection with a threatened punishment for a crime committed, the genuineness of the symptoms is frequently doubted.

One, of course, can readily see with what facility an individual of the type under discussion could malinger mental symptoms. Reality and fiction have about identical values in this type of mental make-up, and it is frequently impossible to separate the genuine from the fictitious in their mental productivity.

It is likewise quite easy to divine why an individual of this sort would resort to malingering in his effort to extricate himself from a difficult situation which he is organically unable to meet squarely in the face. On the contrary, it would be strange indeed were an individual of this type to refrain from resorting to this form of defense. Of course, even the man whose history we have just quoted may still be considered mentally responsible before the law were we to judge him by the legal standards of responsibility. But as physicians we need not on this account refrain from attempting to delineate these mental types in their true colors.

The situation is well illustrated in the following case. Here the symptom of pathological lying is associated with pathological swindling and criminality and offers a fertile field for seeds of malingering.

E. D. C., a white male, aged thirty-four, came to us on April 16, 1914, from the penitentiary at Stillwater, Minn., where he was serving a sentence of ten years for white slavery. He was admitted on a medical certificate which stated that his father was supposed to have died from pulmonary tuberculosis. The patient gave a history of epilepsy until fourteen years of age, likewise of having been a patient in a Vienna hospital for the insane for one and a half years, in 1900 and 1901. So far as was known to the prison authorities, he was mentally depressed and had delusions since his arrival at the Minnesota State Prison on October 11, 1913. The present symptoms were described as mental depression; says that everybody is persecuting him; also has the delusions that he has or can invent a wonderful electric machine which he wants to sell to the government for a hundred million dollars; said he would shoot himself and die in prison. Physical condition was not good. Patient suffered from obstinate constipation, peculiar shuffling gait, suggesting partial loss of control of legs and feet. Complained of constant headache on the top of his head. No fever.

On admission to this hospital the patient was in poor physical health and very anemic. He was quite slender in stature and somewhat effeminate in manners and speech. He walked with a very marked limp of the right leg, stating that he had been afflicted in this manner ever since his first attack of mental trouble at the age of nineteen. Patellar reflexes were markedly exaggerated on both sides, the left more so than the right, and ankle clonus was present on the left side. Babinski phenomenon was absent. While the reflexes were being tested he volunteered the information that his left patellar reflex was very much stronger than the right. He was a very glib talker and spoke fluently in five foreign languages. He gave his name as E. J. B., Count de C., the son of the chamberlain to the Austrian Emperor and of a famous Austrian countess. In the official papers which accompanied him to the hospital the above name was followed by several aliases. He talked in an affected, whining manner, constantly complained of various bodily ailments, and showed a marked tendency to hypochondriasis. He spoke of himself as a poor, down-trodden, and persecuted unfortunate who is being constantly misunderstood. The whole "white slavery" episode for which he is unjustly made to suffer ten years' imprisonment was a trumped-up affair on the part of the sheriff, who was bound to make a case out of it. He married the girl with the best of intentions, and when arrested was with her on the way to the Atlantic coast, preparatory to sailing for Paris, where he intended to give her a splendid time. She testified against him at the trial because she was scared into it by the officials, and, being naturally of a weak nervous organization, she gave in. He was certain he was going to die if he had to serve out his sentence, because prison life is so different from the life he has led in the past. He is entirely too refined to be able to stand the rough life of imprisonment. Referred the examiner to the Austrian Embassy, which could readily establish his noble descent and get him out of this terrible predicament. When, later in his sojourn here, he was interviewed by several gentlemen from the Austrian Embassy, he maintained the same attitude of wronged innocence, notwithstanding the fact that

these gentlemen confronted him with an undoubtedly genuine photograph of himself, obtained from the Austrian police. It seems that he was quite a famous character in Austria, and had served a sentence there under a different name for a similar offence (white slavery). Soon after his arrival at the Government Hospital for the Insane he began to scheme for his escape, and on one occasion attempted to saw the guards in his room with an improvised saw. He likewise began to associate freely with the more dangerous element of the criminal department of this hospital, quite likely with a view towards getting assistance for his escape. He spoke with reluctance of his ideas concerning the inventions, adding that he had decided to quit talking about these things, because, although he is quite convinced of the extreme value of these original ideas of his, people have told him he was crazy wherever he expressed them. As an illustration of some of these extremely valuable original ideas the following may be mentioned. It concerns a bed-bug trap which he invented, and which he described as a paper pocket which is placed in the bed and scented with oil of pine so as to attract the bed-bugs. These make their home in this paper pocket and lay their eggs there, after which it is removed and burned. In the course of time (about two months) he fully recovered from that serious leg affliction from which he stated he had been suffering since the age of nineteen.

When an attempt was made to obtain his past history it was soon discovered that it was so fantastically colored with fabrications as to be entirely worthless, so far as a reliable account of his past life is concerned. As an instance of pathological lying, however, it was a masterpiece. He was requested to write out briefly his past life history, and in this abbreviated form it covered twelve closely-typewritten pages. We will not burden the reader with a complete reproduction of his story, although I assure you it makes very interesting reading material, but will simply review it briefly.

He speaks of the confession made to him several years ago by the lady whom he had always looked up to as his mother. She told him that she was only his foster-mother, and that in reality he was the son of the Austrian chamberlain and a famous countess. The latter turned him over into this lady's care when he was quite young, following her divorce from the chamberlain. She furnished him with the authenticated proof of the fact that he was entitled to a fabulous fortune left by his parents. Unfortunately the lady died after a brief illness, during which he practically sacrificed his life to save her, and thus his most important witness is forever inaccessible. The papers which could readily prove his noble descent were, most unfortunately, taken from him when he was arrested and are probably destroyed by this time.

His foster-mother, he states, was regularly supplied with funds by his real mother, gave him an excellent education and travelled with him extensively. In a plea for clemency he dwells upon the fact that his father died insane, that he himself suffered from epilepsy in his youth, and that at the age of twenty he spent a year in an insane asylum in Austria.

As an instance of his tendency to dramatization, of the part his ego plays in the recital of his past exploits and of the tendency to crave sympathy and compassion, a characteristic quite common to these pathological swindlers, the following, his own description of

the circumstances which brought about his admission to the Vienna Insane Asylum may be quoted:

"While on vacation, I met at Wertersee, which is a fashionable summer resort, a girl with the name L. Adle von D. I had left my tutor behind. She was the first girl I met, and my romantic character, my easily-excited nervous system, overpowered me and I fell in love, in love as deep as a man can fall. A few months after that I was engaged to her, and we should have been married on the 23d of April, 1899. On the 22d of April my beautiful beloved bride was riding horseback with me in the park, when at once her horse frightened, threw her off, dragged her for a distance and then left her behind, a motionless, bleeding mass. I saw right away that she was dead, lost to me, lost forever; there was but one way not to lose her, and that was to follow her soul, and that as quickly as possible. There in the park beside her I took my pistol and shot myself. The public had gathered and stopped me, and then I don't know what happened. I only remember that I was ill for a long time, and then I was ill again, and they told me L. was alive, and then I found out that she was not alive and I was ill again."

Of course, the entire episode is a fabrication. The patient admitted quite as much, but the interesting thing in this episode is the fact that it illustrates how rigidly dependent lying is upon unconscious motives. Had this episode really taken place, the patient, because of his particular make-up, would have acted, in all likelihood, just the way he behaved in his fantastic adventure.

After his year's confinement in the insane asylum his foster-mother travelled with him in France, England, Egypt, and Turkey, in order to divert his mind. Finally arriving at Transylvania, he became infatuated with a poor girl named P., whom he christened L. in memory of his former love, and married. The highly dramatic adventures of this second matrimonial venture are altogether too numerous to describe in detail. He describes in a very dramatic style how this lady was kidnapped from him by a family of New York artists and spirited away across the ocean; how after awakening from his unconsciousness, induced by some dope administered to him in a tea which he had with these artist-friends the night before, he at once made for the dock, arriving there just as the ship carrying his wife was disappearing from sight; how he pursued them across the Atlantic, to England, the continent, and so on, finally locating them in Cape Town, South Africa; how upon arriving there he was mortally wounded to find his beloved wife performing upon the stage of a cheap, dirty place. An excerpt from his description of this

eventful voyage is as follows: "We passed Las Palmas, Ascension, and St. Helena. Christmas and New Year's were celebrated on board the ship, but I did not care much for it. I was too much in distress. Would I find her there? Would I reach her in time? How would I find her? Would she be alive? My excitable fantasy awakened in me the most terrible suspicions. I suffered dreadfully, and it seemed to me we would never arrive. But we did at last, and some time in the beginning of January, 1906, I landed in Cape Town." This is how he discovered her: "I knew I was going to see something terrible, but I remained there—I had to. There were the rope dancers, the clowns, and the music, but I had no interest in them. I was waiting for L., my wife, and she came. On a small, mean stage L., my beloved wife, appeared with painted cheeks and shining eyes, dressed up in tights. She was dancing a mean dance and singing an obscene song before an audience consisting mostly of drunken sailors. So I found my wife L. and the music played. It was surely wonderful that I could control myself at such a moment. At once it seemed to me that I had no reason to be astonished. I was quiet and decided and waited until the show was over, and after the show I went behind the stage, and when my wife came out, laughing and happy, with a couple of other girls, I stepped near her and said simply 'L.' She gazed at me and fainted." Thus he finishes another tableau in his adventurous career. Several other similarly dramatic adventures follow in his history, the last of which landed him, wholly unjustifiably, in prison for ten years. When asked why all his love adventures ended so disastrously, he replied: "Doctor, all my life I have been suffering from a 'superaltruistic monomania to help girls in distress,' and that is how I'm repaid."

Any discussion on "freedom of will" and responsibility in connection with an individual of this type is, of course, quite futile and really of no practical importance. This man ought to be permanently isolated from the community, but not because he happens to have violated a given statute, but because his grave mental defect—in all probability an incurable defect—tends to express itself in criminal traits.

Back of this fantastic lying we see again that instinctive craving for compensation by means of a resort to the imagination and fantasy, a subterfuge rendered easy by those inherent defects enumerated in connection with the preceding case.

All the frankly psychotic manifestations, such as his delusional ideas and his grave affection of the lower extremity which served to put him in a hospital for the insane, were, of course, entirely malingered.

This brings us to the subject of malingering proper.

III

In malingering we see the application of deceit and lying to a definite situation. That which is a habitual type of reaction in some individuals, as was illustrated in the foregoing cases, comes to the fore in others only under certain stressful situations of life. While in the habitual fabricator the most prominent motives are those of an egoistic nature, a craving for self-esteem as compensation for an inherent defect, in the malingerer we see a resort to this form of reaction as a means of self-preservation, as a means of escape from a particularly painful situation.

There was a time in the history of psychiatry when malingering was a frequent subject of discussion in psychiatric literature. This was due not so much to any inherent practical importance of the phenomenon of malingering as such as to the faulty conception that this phenomenon was something which by its very existence ruled out the existence of mental disease. More scientific studies of personality which led to a direction of our attention to the malingerer rather than to malingering as an isolated mental phenomenon brought with it a complete change of attitude towards the entire subject.

To-day, far from harboring the notion that malingering and mental disease are mutually exclusive, we are beginning to look upon malingering itself as the expression of an abnormal psychic make-up. Furthermore, far from believing, as of old, that the proverbially insane is supposed to be totally devoid of discretion in his conduct, we know that there may be a good deal of method in madness, and that even the frankly insane malingerer mental symptoms when the occasion requires it. No experienced psychiatrist would to-day, for instance, consider the oft-quoted story of the alleged madness of Ulysses as evidence of malingering.

The story is told that Ulysses, in order to escape the Trojan war, feigned insanity. He yoked a bull and a horse together, ploughed the seashore, and sowed salt instead of grain. Palamedes detected

this deception by placing the infant son of the King of Ithaca in the line of the furrow and observing the pretended lunatic turn the plough aside, an act of discretion which was considered sufficient proof that his madness was not real. Without attempting to pass upon the case of Ulysses, we may say without fear of contradiction that no one would to-day depend upon such criteria. Experience teaches us that an individual may be very seriously mentally affected and at the same time show sufficient discretion of conduct to avoid threatening danger and to seek those means which best subserve his immediate needs and wants. Not only is this true, but we have arrived at a stage where we are prone to look upon a great many of the psychoses as the direct expressions of the individual's wish—as a haven sought out by himself within which he seeks shelter from the tempests of life. One of my patients tells me that the gun which he used in the alleged homicide was not loaded with bullets, but with paper wadding put there by his enemies, hence his alleged victim could not have been killed; in fact, he knows that this man is alive and having a good time on the money furnished him by his, the patient's, enemies. Another instance is that of a colored man who is serving a life sentence for murder. Among the many symptoms which this fairly advanced dementia praecox case shows is the one that he considers himself a white man; that his dark color is due to some paint which he used in order to disguise himself; and that, inasmuch as the murder with which he is charged was supposed to have been committed by a colored man, he is not guilty of it. The motives here are quite obvious. Both these individuals find life much more bearable believing, as they do, in their innocence of the crimes imputed to them. Many other examples could be cited to prove that symptoms in mental disease do serve a definite purpose; that there may be indeed considerable method in madness.

Nevertheless, the observation is not uncommon that whenever such method is detected under circumstances where some ulterior motive may be ascribed to it the lay mind, and not infrequently psychiatrically-trained physicians, are at once ready to question the genuineness of the symptoms. It is the more curious that the so-called "insanity dodge" cry is frequently raised under circumstances where it would seem to be the least justifiable, as, for instance, in the case of an individual battling for his life before the bar of justice.

A little inquiry, however, into this phenomenon will help us to understand it better. It has its root primarily in that very common tendency of man to impute to his neighbor a type of behavior, a form of reaction, of which he would gladly avail himself were he in his neighbor's place, and the weapon he would use under the circumstances would very likely be that exquisitely human trait, deceit, malingering. It is a weapon which has played a tremendous part in the evolutionary struggle, not only of man but of all living things; in a broader sense, it may be looked upon as an organic function, as an endowment, thanks to which the weak, inferior being is able to avoid the danger of becoming the prey of the stronger, superior being. This function is very well illustrated in those animals which are able to acquire the color of their immediate surroundings in order to render themselves more difficult of detection. It is common among various insects, reptiles, and amphibians. The chameleon may be especially mentioned in this connection. Even the eggs acquire, in the process of natural selection, the color of the place where they are deposited, and the cuckoo which is about to cheat a couple of another species by placing her eggs in their nest for them to hatch selects that species the color of whose eggs most closely resembles that of her own, in order to assure herself of the success of the deception. The simulation and malingering practised by the fox is common knowledge. Malingering, an instinctive function originally, has, in the process of evolution, become an act of reason with certain animals. One is forced to believe, from a survey of mythological writings, that primitive man must have had recourse to simulation and all else that this term stands for whenever he was confronted with an especially difficult problem in his struggles for existence. To the gods was attributed, among other special propensities, the ability to assume any shape or form, else how could they have performed all those miraculous escapades? Thus we are told that Jove transformed himself into an eagle when he carried off Ganymede. Achilles, the son of a goddess, sought to avoid the iniquitous fate which drove him to Troy by disguising himself as a woman. Deception is a common weapon of defence with the savage and with the inferior races of to-day. It is the tool by means of which these individuals render things as they want them to be; it is with them the means for a more direct, less difficult, less tedious solution of the problems of life.

The child in whose development the various steps of phylogeny are recapitulated shows this tendency to deception, to simulation, and dissimulation in a very pronounced degree. Lombroso, who was the first to demonstrate that so-called moral insanity is but a continuation of childhood without the adjunct of education, cites many facts, not excepting his own example, to show that the child is naturally drawn to fraud, to deception, to simulation. The child simulates either because of fear of injury and punishment or because of vanity or jealousy. Ferrari,³ in his excellent work on juvenile delinquency, discusses the various motives for deception and malingering in the child. According to him, deception is, first of all, instinctive with the child. It malingers because of weakness, playfulness, imitation, egotism, jealousy, envy, and revenge. Deception frequently forms for it the only available weapon of defence against the parents and teachers.

Penta⁴ cites many well-authenticated cases of malingering of mental symptoms in children. Of special interest is Malmstein's case of a girl of eight years who, in order to deceive her father and render him less severe in his treatment of her, and in order to gain the sympathy of those in the house who were in the habit of giving her sweets, feigned complete muteness for five months, after which time, no longer able to resist the desire to speak, she went into the woods, where, believing herself unobserved, she began to sing. St. Augustine, in his confessions, speaks of his childhood in the following manner: "I cheated with innumerable lies my teachers and parents from a love of play and for the purpose of being amused." * Penta, after a thorough discussion of the subject of malingering in children, comes to the conclusion that children use all the diverse forms of fraud, from simple lying to simulation, much more frequently than is believed or known. It may with them as with some lower animals simply be an instinctive playfulness, a habit or a necessity, as a weapon consciously and voluntarily wielded. This inherent tendency is, of course, modified to a considerable extent by the environment under which the child was brought up. Finally, the independence which the growing human being acquires from this form of reaction is in direct proportion to the ability he has acquired through education and precept to meet life's problems

* Cited by Penta.

squarely in the face. We will see, later on, how the type of individual who is most likely to malinger has in reality never fully outgrown his childhood; that his reactions to the problems of everyday life are largely infantile in character.

Thus we see that malingering has its *raison d'être*; that, after all, it is not at all strange that the suspicion of its existence should be so frequently raised by our legal brethren—yes, and medical brethren, too; that in reality it ought to be a very common manifestation. Nevertheless, paradoxical though it may seem, cases of pure malingering of mental disease are comparatively rare in actual practice. Willmanns,⁵ in a report of 277 cases of mental disease in prisoners, cites only two cases of pure malingering, and in a later revision of the diagnoses of the same series of cases the two cases of malingering do not appear at all. Bonhoeffer,⁶ in a study of 221 cases, found only 0.5 per cent of malingering. Knecht,⁷ in an experience of seven and a half years at the Waldheim Prison, did not observe a single case of true malingering. Vingtrinier⁸ claims not to have found a single case of true malingering among the 43,000 delinquents observed by him during his experience at Rouen. Connolly, Ball, Craft-Ebing, Jessen, Siemens, Mittenzweig, and Scheule are quoted by Penta as having expressed themselves that pure malingering is extremely rare. Penta, on the contrary, observed about 120 cases during his four years' service in the prison in Naples. He gives as the reason for this unusually high percentage of cases observed by him the fact that two-thirds of the inmates of the prison belonged to the Camorra, an organization whose members are gleaned from the lowest and most degenerate stratum of society, and in whom the tendency for deception and fraud in any form is highly developed.

The question naturally arises, What is the reason for this rarity of cases of malingering? Is it because man has reached a state of civilization where he no longer resorts to deception? Decidedly not. The reason lies almost wholly in our changed attitude of to-day towards this question. As we acquire more real insight into the workings of the human mind we are prone to become more tolerant towards the human weaknesses, and in our study of the malingerer it is the type of individual, his mental make-up, which interests us most, rather than the malingered symptoms. It is for this reason that to-day the number of authorities is indeed small who do not look

upon malingering *per se* as a morbid phenomenon, as an abortive attempt at adjustment by an individual who is quite incapable of adequately coping with the vicissitudes of life. In my own limited experience of several years with insane delinquents I have yet to see the malingerer who, aside from being a malingerer, was not quite worthless mentally.

Our discussion of malingering,—*i.e.*, of the exhibition of a fictitious mental state by an individual for the purpose of rendering more bearable or more pleasant a particularly painful or difficult situation of life, or for the purpose of entirely annihilating such a situation and of removing it from consciousness by substituting for it a state of affairs wholly created from the individual's fantasy,—would indeed be incomplete if we were to omit from our consideration at least that much of Freud's psychology as pertains to this subject.

Thus far we have considered principally the views of what may be termed the descriptive school of psychiatry, though we have briefly touched upon the instinctive biologic roots of this primitive mode of approach to the problems of life, malingering of mental symptoms.

With the consideration of the Freudian psychology we enter upon the interpretative phase of psychiatry and to a very large extent of mental life in general.

Freud holds that a great part of mental life can either partially or entirely be summarized under two principles, which he terms the "pleasure principle" and the "reality principle" respectively.⁹ These two opponents are constantly facing one another in our inner life. The former represents the primary, original form of mental activity, and is characteristic of the earliest stages of human development, both in the individual and in the race; it is, therefore, typically found in the mental life of the infant, and to a less extent in that of the savage. Its main attribute is a never-ceasing demand for immediate gratification of various desires of a distinctly lowly order, and at literally any cost. It is thus exquisitely egocentric, selfish, personal, and anti-social. The activities of this "pleasure principle," however, constantly come into conflict with the "reality principle." The rigid requirements of our environment, of the social system in which we live, deny us the fulfilment of many, if not most, of our most dearly coveted desires, without, however, being able to abrogate these entirely.

There are two ways in which these forbidden desires may become satisfied. On the one hand, the instinctive striving, finding it quite out of the question to gain expression through the desired channels, may become sublimated into a form which is in accord with our social and ethical requirements, or the forbidden strivings and desires may find gratification in the individual's fantasy. We are here particularly concerned with the latter mode of psychic adjustment. This mode of adjustment is the usual way in which conflicts with reality are solved by the child and the savage. For them a rigid recognition of reality, such as is necessitated by the normal adult in his struggles for existence, does not take place. In fact, the evolution from childhood to adult life, from savagery to civilization, consists in nothing else than in the progressive recognition of reality and the adjustment thereto. One of the forms of getting away from reality, or a falsification of conditions as they actually exist, was expressed by one of Freud's patients as the "omnipotence of thought" (*Allmacht der Gedanken*). It is a state of mind in which the individual believes in the omnipotence of his thoughts; that his mere thinking possesses tremendous power; that no sooner he thinks of a certain deed than the same is accomplished; that an enemy, for instance, is actually harmed by merely wishing him harm. This mode of thinking forms the basis for many magic ceremonials. It is this latter mechanism,—*i.e.*, the endowment of one's own thoughts with an omnipotent power,—which is also frequently illustrated in malingering. It is sufficient for the type of individual who malingers to merely say the word, and the most fantastic creation of his fancy immediately becomes a reality and is apperceived by him as such. A mere verbal denial of guilt on his part is sufficient to make him believe fully in his innocence and act accordingly. When we inquire into the origin of this facility in transforming fantasy into reality, for this omnipotence of the mere word or thought, we find it in the totally unreasonable overcompensation of these individuals for their feeling of impotence and weakness. This feeling of weakness and helplessness naturally becomes more acute under especially stressful situations of life, and hence it is that the criminal, especially the habitual criminal, who always uses deceit and simulation in his vain attempts at meeting life's difficulties squarely in the face, regularly resorts to malingering when confronted with a serious criminal charge or when life in prison becomes espe-

cially unbearable to him. A good illustration of an attempt at falsification of reality for the purpose of annihilating a particularly stressful situation by means of a mere assertion of a state of affairs such as he would wish them to be, with a total disregard for the real facts which constantly stare him in the face, is furnished by the following case:

M. came from a good family and led a normal life, earning a substantial livelihood as printer up to the age of about thirty-eight. At this time one of his children died, and this, together with poor physical health, is said to have brought on a severe depression, during which he was actively suicidal and very self-accusatory. Several months later he lost another child by fire, and at this time also claimed to have obtained positive proof of his wife's infidelity. His mental depression became very much more aggravated; he attempted suicide on a number of occasions, was very suspicious and apprehensive, developed persecutory delusions, feared he was going to be burned to death or suffer some other horrible fate. This condition finally necessitated his admission to the Government Hospital for the Insane on May 28, 1897, at the age of forty. Here he gradually improved, and was discharged into the care of his father on October 22, 1899.

On February 19, 1903, he was readmitted as a D. C. prisoner, having shot and killed a man who seduced one of his daughters. Some idea concerning the type of individual we are dealing with here can be had already when we keep in mind his mode of reaction to the various stressful situations in his life enumerated above. All went well with him so long as he was not called upon to make a difficult adjustment, but with the loss of his child he develops a mental disorder. That he should have reacted to his daughter's injury with murder is quite in line with his general inability and incompetency for proper adjustment, and the development of a mental disorder which has kept him in an institution for the past twelve years and will in all probability keep him there the rest of his life, in reaction to the committed murder, further emphasizes the general vulnerability of his nervous system. Let us see how he attempts to adjust himself to the situation; how he faces reality in his psychosis.

He does just what primitive man has done and what the child of to-day does. Not being able to face reality, he annihilates it and substitutes for it a world created out of his fantasy, in which he plays every conceivable rôle but the real one,—*i.e.*, that of a patient accused of murder. We will see that he does this by the mere fiat of his word—that magic dexterity which has served so well primitive man in his struggles with reality.

Let me reproduce some of his letters, of which he hands me at least one daily. Here is one addressed to King George V:

DEAR SIR: I wish to return at once to England to the Cissel Hotel. You told me not to take my wife back after the courts here had granted me a divorce, so I look to you to just please come on here in person and have me released, as the United States Senate has given permission for you to come and release me. I am the young man that rescued you from drowning at River View, and after telling you my case you advised me to get a divorce. The guests from the hotel were wishing for me to return when on here, as also my family.

Please find enclosed check for your expenses and give prompt action.

Very respectfully,

(W. H. M.) HOWARD HALL,
Washington, D. C.

The check:

U. S. Treasury,
Pa. Ave. and 15th Street. WASHINGTON, D. C., October 1, 1914.
Please pay to King George of England Ten Thousand Dollars for
professional services.

\$10,000 W. H. M.

Thus by the mere stroke of the pen he, a poor mortal accused of murder and indefinitely confined to an institution, succeeds in putting himself in touch with King George, in drawing *ad libitum* upon the United States Treasury, in ridding himself of the wife whom he accuses of infidelity, and in annihilating old age by styling himself "the young man," when in reality he is fifty-seven years of age at present.

His belief in these statements is absolutely unshakable, notwithstanding the fact that he retains a clear orientation concerning his immediate environment, and thus has the actual state of his affairs constantly forced to his attention.

His grandiose compensation has such dimensions as to gratify every imaginable wish of his. He came here because he was divorced from his wife, not because of any crime he had committed. He is the son of the supervisor in charge of his building. He owns this institution and built it for a place in which he could count his money. He had forty-six wagon-loads of this. He will live 250 years, because he has taken the severest punishment to secure this. He refuses to assist with the ward work, because he pays \$1.50 a day for board and is not supposed to do any work. He was brought here to select a woman for

his wife. They brought him a lot of blue-eyed blondes and also a lot of Baltimore and St. Louis beauties, etc.

W. H. M., Owner, Washington Asylum, 5000 Branch Hospitals, five million employees.

ANACOSTIA, D. C., Fri., Nov. 6, 1914.

DEAR MR. PRESIDENT:

I come over here to take out forty-six wagons loaded with greenbacks. I respectfully had it arranged to have the Senate hold me here on account of so much wealth until I thought it safe to return. Please sign this and return it by mail. The Senate ordered me to write it to you, as there is no crime against me.

WASHINGTON, D. C., Fri., Nov. 6, 1914.

DR. W. AND STAFF OFFICERS OF WASHINGTON ASYLUM:

Please allow Mr. W. H. M. to pass out the gate at once free.

Very respectfully,

W. W.

Please don't delay this one minute.

Thus we see that the entire content of this man's delusional fabric is intended, first, to serve the purpose of annihilating the painful reality, and, second, to substitute for it a beautiful world in which he finds himself free and young again, enjoying his fabulous riches and many blue-eyed beauties. It is the only compromise possible for him, and the fact that it is nothing but a day-dream does not in the least detract from its compensating possibilities for this individual's painful reality. This man's mental disorder has been so obvious ever since its inception that the question of malingering never suggested itself to anyone, and yet the underlying mechanism in this case differs in no particular essential from the cases usually considered as malingerers. In both instances the psychosis represents an attempt to get away from a painful reality by individuals who are quite incapable of meeting such reality face to face.

A more detailed consideration of Freudian psychology, especially such as concerns the subjects of determinism, defence, and compensation, would give one a still clearer insight into the subject under discussion, but to do so would lead us considerably beyond the scope of this paper. From what has already been said thus far it will be seen that the mental processes underlying the mental state of malingering differ in no essential from those operative in the human mind generally; that man in his endeavor to reach a satisfactory compromise between the two underlying principles of his conduct,—i.e., that of pleasure and reality,—frequently resorts to his fantasy; that malin-

gering in its broader sense,—*i.e.*, the attempt to evade reality,—is a common mode of reaction in primitive man, the child of to-day and in the undeveloped mind, in all of these instances signifying an inability to meet stern reality in the face, and that, therefore, malingering, when it does occur, should at least not be looked upon as an aggravating circumstance, which is not infrequently the case when the malingerer happens to be facing a court of law.

That this mode of reaction is at times resorted to by individuals who had always been looked upon as being far from incompetent only proves that under special stress, especially mental stress, man readily sinks to a lower cultural level and resorts to the defensive means common at this level.

Clinically, malingering is to be considered from three distinct viewpoints:

1. Malingering in the frankly insane;
2. Malingering in those apparently normal mentally; and
3. Malingering in that large group of border-line cases which should rightly be looked upon as potentially insane and as constantly verging upon an actual psychosis.

It may be difficult to convince the lay mind, and especially the legal mind, that an individual may be suffering from an actual psychosis and at the same time malinger mental symptoms. It is the legal mind especially, working as it does with well-differentiated, sharply-defined, and wholly artificial concepts, that demands a sharp, strict differentiation between the mentally well and the mentally sick. By means of man-made statutes a line has been created, on one side of which they would place all the mentally well and on the other side all the mentally diseased. By the same token they cannot conceive how an individual placed on one side of the line may be able to manifest a type of reaction, a form of conduct, which is by common consent considered as being something essentially characteristic of the man on the other side of the line, losing sight of the fact that in the evolution of the human mind Nature is far from drawing such sharp differentiations as are exemplified by legal statutes. It would certainly be very convenient, and expert testimony would certainly have been spared the disrepute into which it has fallen, were Nature more accommodating in this respect. But Nature does not work in this fashion; differentiation in Nature takes place through infinite

gradations, and between the absolutely well mentally and the frankly insane there is a host of individuals concerning whom it is almost next to impossible to state to which of the above two groups they belong. Thus it is that the frankly insane at times manifest conduct which taken by itself differs in no way from normal conduct, and that the so-called normal individual at times exhibits a type of reaction which is essentially of a psychotic nature.

To the psychiatrist it is a matter of common occurrence to see the mentally diseased not only dissimulate very ingeniously and tactfully mental symptoms so that it is frequently impossible to convince a jury of laymen of the existence of mental disorder, but at times, when the necessity arises, they consciously accentuate their symptoms or frankly malinger.

There is nothing strange about this. There is absolutely no reason why the insane, in his desire to gain expression for his wishes and strivings, should not avail himself of the same means that normal man uses.

The following case illustrates this very clearly:

W. J. C., a well-educated, fairly efficient newspaper reporter, after a period of indefinite, vague, neurasthenic complaints lasting several weeks and which brought about his discharge from the staff of a local newspaper, awoke one July morning, picked up his infant child and, throwing it against the opposite wall of the room, inflicted fatal injuries upon it. After this he turned his face to the wall and remained quietly in bed. There was no ascertainable cause present for this act. The child was in the habit of entering the patient's room every morning and playing with him before he arose from bed. It was apparently on the same errand on this fatal morning. Shortly after getting up the patient wanted to leave the house in his night clothes, but was prevented from doing so and held until the police arrived. Six and one-half hours later,—i.e., on July 27, at 12.30 P.M.,—he was seen by me at the Government Hospital for the Insane.

On admission to the hospital he was very restless and anxious, walked up and down the room, hands in his pockets, would sit down for a few minutes, then walked the floor again. Later in the day he was visited by a newspaper reporter, a friend of his, with whom he conducted a clear and coherent conversation, and when told by the latter that the child was dead he assumed a markedly depressed facial expression. In reply to my questions intended to bring out his attitude towards the whole affair, he usually stated, "I don't know," and on one occasion in a very agitated manner said, "So help me God, doctor, I don't know anything about this." Later in the day he gave a clear and coherent account of his past life, and a detailed mental examination failed to bring out any gross mental disorder. He showed, however, considerable uncertainty about the length of time certain events of the preceding day consumed. He could not tell exactly when he retired the previous evening. He remembered, however, going to bed, likewise that his wife came to his room some time during the night and asked him

to fill the babe's milk bottle. He didn't remember whether he did this or not. The next thing he remembered was sitting in the parlor of the house, some time in the morning, and was able to describe accurately those who were present.

During the remainder of the afternoon he was morose and depressed, refused to eat his supper, and continued in a restless state. He was again seen by me at 7.30 in the evening in company with two other physicians. The patient approached one of the physicians, extended his hand to him, and in a familiar manner said, "Hello, Mr. C." When told that this was not Mr. C., patient exclaimed "Oh!" in a confused and astonished manner, said, "Where am I?" and reeled over on the floor as if in a swoon. He was told to sit up in the chair, which he did.

"What date is this?" "August 26, 1910" (July 27, 1910).

"How long have you been here?" "Since July 25, 1910."

"How long a period would that make?" "One month—oh no, one day; this is August 10, 1910."

"What were you sent here for?" "Don't know."

"Who brought you here?" "Don't know—oh yes, two policemen."

"What is your babe's name?" "Don't know."

"What is your wife's name?" "Don't know."

He was then given a newspaper clipping in which the whole affair was fully described. He read the account through, but without exhibiting the slightest emotion, and said, "Isn't that awful, doctor?"

"How do you feel about this affair of your babe being dead?" "I don't know anything about it."

"How much is 2 times 3?" After considerable delay and in an absorbed mood he said, "70."

"How much is 6 times 7?" After a long pause he said, "Don't know."

"Which is the largest newspaper in Washington?" "Don't know." (Patient was on the staff of a local newspaper.)

When we remember that only several hours before this the patient gave a coherent account of his past life and showed nothing grossly psychotic, the foregoing symptoms, such as the lack of knowledge of his wife's or babe's name, inability to solve problems such as 2 times 3, the fainting spell, etc., must be looked upon as unquestionably malingered. When examined the following day he showed still further signs of malingering, the detailed account of which must, however be omitted on account of lack of space, and yet this man was unquestionably insane; the act itself (the infanticide) was unquestionably an insane act, as will be shown later. We have mentioned the fact of his neurasthenic symptoms and how as a result of these he lost his position. The physical examination of the patient revealed certain neurological signs, such as exaggeration of the patellar reflexes, lateral nystagmus of both eyes, which determined us to look further into the question of his physical state, especially in view of a history of luetic infection five years before. A spinal puncture was accordingly per-

formed, and the spinal fluid findings were as follows: Fluid clear, pressure moderately increased, Noguchi butyric acid reaction positive, a rather uncommonly heavy granular type of precipitate, cells per cubic millimetre 129. Differential cell count: Lymphocytes, 94 per cent.; phagocytes 2.2 per cent.; plasma cells, 0.25 per cent.; unclassified cells, 2.25 per cent. Wassermann reaction with spinal fluid negative, both active and inactivated. Wassermann reaction with the blood-serum negative. This, however, became positive later on in the disease. The above findings indicate unquestionably that this man was suffering from cerebral syphilis.

It is not necessary to enter into further detail concerning the progress of this case. Suffice it to say that with proper treatment this man entirely recovered and was so discharged on June 14, 1911.

There can be no doubt that this man malingered mental symptoms, neither need there be the slightest doubt about his having suffered from an actual mental disorder. The motive for his malingering is perfectly obvious. Finding himself suddenly confronted with a charge of infanticide, and rent by the various conflicting emotions which a realization of this carries with it, he resorted to the common weapon of defence, malingering of mental symptoms. We have seen that he deceived no one but himself; that in reality he was a very seriously affected individual. It was fortunate for this man that because of some lucky turn of events he landed in a hospital instead of in jail.

A more or less similar case recently received the maximum sentence of life imprisonment for manslaughter. In this instance the case was chiefly observed by jail officials instead of physicians in its early course.

The foregoing case, it seems to me, illustrates very well that, while we are fully justified in assuming a relationship of cause and effect in many cases of malingering, in many others malingering and actual mental disease are concomitant phenomena, having a common root in the same diseased soil. Thus Pelman¹⁰ holds simulation in the mentally normal to be extremely rare, and he always finds himself at a loss to differentiate between that which is simulated and that which represents the actual traits of the individual. My own experience prompts me to agree with Pelman. This confusion and difficulty of differentiation between actual mental disease and malingered symptoms may manifest itself in two ways. The same individual may be

suffering at one time from a frank mental disorder, and at some later period, finding himself in a stressful situation, malingering a psychotic state, or, as we saw in the preceding case, malingering of symptoms may manifest itself during the course of a frank mental disorder, as will be further illustrated in succeeding cases. Pelman's statement, however, applies most forcibly to that mass of border-line cases which will be discussed later.

T. W. was admitted to the Government Hospital for the Insane from the United States Penitentiary, Leavenworth, Kan., on June 16, 1910, at the age of twenty-nine. He was serving at the time a sentence of eight years for post-office robbery. His own version of his family and past personal history is unreliable. He claimed to have suffered from a paralysis of both arms from March, 1909, until March, 1908, and that he was at that time confined to a sanitarium. He would not give the name of that institution, and the whole story may have been fictitious. At any rate, if he did suffer from this paralysis it was very likely functional in type, as at the time of his admission here, four years later, he showed no traces whatever of this. He admitted having been arrested several times before for drunkenness and disorderly conduct. His industrial career was very irregular.

The onset of the present attack, as described in the medical certificate which accompanied him on admission, was as follows: "On the evening of April 17, 1910, patient suddenly began to shout, sing, and pray, claiming that the spirit of God had entered his heart and that he had a mission to perform. This mission was to go among the prisoners and preach the Gospel. He then manifested this in a very erratic manner; ideation was disturbed and disconnected, and there was present psychomotor restlessness. A probable diagnosis of manic-depressive psychosis was made by the prison physician."

On admission to this hospital the patient was well nourished physically, talked readily and coherently, was clear mentally, although he stated he did not know the nature of this hospital, adding spontaneously that he knew it was not an insane asylum. His productivity was chiefly of a religious nature. He stated he was the real Elijah III, the real prophet; that the vision of Jesus Christ came to him in his cell, handed him a cross, and told him to pick up his clothes and follow Him. The warden at the penitentiary was jealous of his ability to preach the Gospel, and in consequence tried to get two men to kill him, but these could do him no harm, because he had the spirit of God in him. The warden also tried to poison him. He complained of a fever in his stomach from the food the warden gave him, stated he could see crosses in the corner of his room, and was continually mumbling something to himself in a low voice. He rested well on the first night of his sojourn here, and the following morning told the attendant that he had seen God standing behind him at intervals during the night. On June 28, 1910, he developed a marked religious excitement, preached loudly while out in the yard, and wildly gesticulated in a manner as if he were addressing some one above. He continued intermittently excited until the early part of August, 1910. It should be noted here that at this time there were two other cases confined in the same building, two cases of dementia præcox, who manifested similar religious excitement. It is of importance to note this, inasmuch as suggestion plays a considerable rôle in the choice of the malingered symptom, and because one of the

characteristics of the type of individuals under consideration is a high degree of suggestibility.

In his conduct in the ward he was quiet and orderly, frequently talked in a rational and coherent manner, but invariably brought into the conversation his delusional ideas. In his demeanor towards me he was very evasive, suspicious, and showed a marked disinclination to enter into a protracted interview. Soon after an unsuccessful attempt to examine him more thoroughly he handed me a letter addressed to Judge Landis at Chicago, in which he ordered said Judge to remove Voliva from Zion City and turn the latter over to him, the patient, as the rightful heir and the only real Elijah III. Following this there was another tranquil period, during which the patient's conduct was quite good. About a month later another attempt was made to examine him in detail, but so soon as he noticed my intention to take notes of the examination he became very suspicious and evasive and absolutely refused to coöperate. This episode was likewise soon followed by a letter as follows. The letter was addressed to the warden of the United States Penitentiary at Leavenworth, Kan., and he requested that it be mailed immediately, as it was very important. It was correctly dated and read:

"DEAR SIR: When you receive this letter you will immediately take steps to have me returned to the penitentiary, where I have a divine mission to perform. You old . . . do you realize that you are fooling with the prophet Elijah, the Lord's chosen? Have you no fear of the wrath that God shall bestow on you if you even dare to offend His divine servant? Don't you ever for a minute think that you can connive to beat me out of my property in Zion City, you and that interloper, L. L. Voliva. I shall have it all just as the Lord meant I should, and I shall carry on the work just as the Divine Master meant I should. For what matter it if the world is against us, so long as God is for us? Now, you old reptile, on receipt of this you will immediately discharge the chaplain; he has no business there. When I get back I'll take his place, for I am Elijah III, the Lord's anointed.

(Signed) "T. W. ELIJAH III,
Station L, Washington, D. C."

In the meantime it was noted that the patient was very shrewd in his various schemes for making his escape from the hospital; that he very ingeniously managed to manufacture all sorts of weapons, and that he seemed to be especially delusional when in conversation with the hospital officials.

Soon after the patient planned and executed a very daring escape, taking with him two other patients, but was soon apprehended and returned to the hospital. All of this led me to suspect that the patient was simulating a good many of his symptoms, and that, at any rate, he was very much exaggerating his psychotic state.

However, there was a certain element of contradiction, a certain lack of consistency present in his behavior which is entirely atypical of the pure malingerer. His explanations of his ideas were flat and somewhat dilapidated, and resembled to a certain extent the explanations of a dementia præcox case. In other words, there was no doubt that the patient malingered, but there was likewise no doubt that he suffered from a psychosis. On several occasions he refused to take nourishment for several days at a time in reaction to his delusional ideas.

Upon his return from his elopement it was felt that, owing to his dangerous tendencies, a more thorough attempt at evaluating the relative importance of

the genuine and the maledict in his case ought to be made with a view to returning him to the penitentiary.

He was accordingly again thoroughly examined on April 8, with the following results: He reiterated his delusional ideas substantially as given above. He insisted that he was not insane; that he was railroaded to this hospital because the warden of the penitentiary and other United States officials are trying to rob him of his property in Zion City. "God Almighty meant that Zion City should belong to me." This was decided on the night when he saw the cross.

"How many months in a year?" "Twelve."

"How many days in a week?" "Seven."

"Name the months." "March, April, June, July, August, October, November, December, January, and February."

"What is the last month of the year?" "October."

"What is the first month of the year?" "March."

"Which is the Christmas month?" "I'm not certain, but I think it's January."

"How does vinegar taste?" "Sweet."

"How does a lemon taste?" "Sweet."

"What is the color of an orange?" "Blue."

"Count from 1 to 20." Counts very slowly and deliberately, omitting 11 and 15."

" $4 \times 2 = 8$; $8 \times 4 = 28$; $9 \times 3 = 27$; $7 \times 4 = 24$; $6 \times 4 = 22$; $6 + 7 = 13$;
 $19 + 11 = 30$; $7 + 8 = 14$; $3 \times 3 = 9$; $4 \times 2 = 12$; $6 \times 4 = 14$; $5 \times 2 = 10$;
 $1 + 9 = 10$; $9 + 11 = 21$; $11 + 9 = 18$; $50 + 5 = 11$; $8 \div 2 = 4$; $27 \div 9 = 4$."

"Name the days of the week." "Tuesday, Wednesday, Thursday, Friday, and Saturday."

"Name them again." "Monday, Tuesday, Thursday, Friday, Saturday, and Monday."

In repeating a very simple story he changed the content entirely, and omitted some of the most important details of it.

When we remember that this man was far from being as ignorant as some of the above answers would suggest, and that, while he unquestionably suffered from a psychosis, his state of consciousness was altogether too clear to justify a degree of lack of touch with his environment such as his replies would indicate, it becomes quite obvious that he maledicted. This, together with his dangerous tendencies, determined us to return him to the penitentiary, which was done on April 11, 1911.

He reached the penitentiary on April 13, and on the night of April 20 he began preaching in a loud tone of voice, claiming that he was the son of David, and that he was called upon to go forth and preach to the world. He was removed from his cell to the isolation building, where he refused to take nourishment until April 23. During this period he spent most of the time preaching and singing religious songs, and at times would hold long and heated arguments with some imaginary person, always on religious topics. From the above date until his transfer to the Government Hospital for the Insane on September 24, 1911, he continued in a very disturbed and destructive state, refusing food frequently for several meals in succession, preached, sang, and cursed in turn, gave voice to the various delusional ideas manifested above, and gave objective evidence of suffering from hallucinations. Throughout he strongly maintained that he did not want to

return to the hospital at Washington, as there was nothing wrong with him mentally.

The prison physician who examined the patient at the penitentiary before his second admission to this hospital made the following notation in the case: "The mental examination of T. W. reveals inconsistencies that are strongly suggestive of simulation, and I believe there is in this case a degree of malingering, frequently associated with prison psychoses, yet that there is a psychosis, in my opinion, there is no doubt."

Upon his return to this hospital he became involved in fistic encounters, on the way to his ward, for which there was very little provocation. For several weeks following this he was very surly, dissatisfied, moody, and inaccessible, but showed no other psychotic symptoms. Four days after admission he subscribed to a local newspaper, which he read regularly and kept himself well informed on ordinary topics. He was clear mentally, well oriented in all respects, and adapted himself readily to his new environment, except that he absolutely refused to eat the regular food furnished the patients. For about three weeks he lived practically on fruit and candies which he purchased, persisting in his determination to starve himself unless he were given a special diet. This was furnished him, and he had no further dietetic troubles. No delusions or hallucinations were manifested, intellectual examination revealed no intelligence defect (gross), and, aside from his surly mood and his tendency for rather frequent endogenous depressed periods, he showed no abnormal manifestations.

In this state he required no special hospital treatment, and, as he promised to conduct himself properly if he were returned to the penitentiary, he was transferred back on February 20, 1912.

Upon his return he continued, however, to manifest periodic excitements, with destructiveness, always, however, in reaction to some environmental irritation. He nevertheless managed to remain in the penitentiary until the termination of his sentence.

It is highly doubtful whether proper means will ever be evolved to enable one to differentiate accurately between that which is genuine and that which is malingered in cases like, for instance, the foregoing.

This man unquestionably suffered from a psychosis, and yet there is likewise no doubt that he malingered. The question of the accurate differentiation between the genuine and the shammed seems to me, however, to be strictly an academic one and of very slight practical importance. What is of importance is the recognition that malingering and mental disease are here the expression of the same diseased soil, and that the same source should perhaps be also attributed to this man's criminalistic tendencies. Crime, mental disease, and malingering should perhaps here be looked upon as different phases of a mode of reaction to life's problems which belongs to a lower cultural level, which is largely infantile in character.

That this infantile way of facing reality is dependent upon some

constitutional inherent anomaly is attested to by the circumstance that these individuals practically always react in this manner when forced to form new adjustments, new adaptations. This repeated recourse to mental disease as a refuge from a stressful situation is amply illustrated in a series of cases reported elsewhere.

The other form in which malingering may be so intertwined with actual mental disease as to render accurate differentiation quite impossible is where the individual may be suffering from a psychosis at one time and at some later period, finding himself in a stressful situation, malinger a psychotic state. In these cases the danger of ever committing a habitual criminal to a hospital for the insane is especially apparent.

Finding, as these individuals do, a successful and convenient refuge in a psychosis, it is but natural for them to again seek this refuge when they find themselves in conflict with the law. But that which was at one time a spontaneous, unconsciously motivated mental reaction may later become a conscious volitional act, an only available means of escape—malingering of mental symptoms.

J. E. M., aged twenty-seven on admission, June 15, 1912. Family history obtained from the patient four days after admission is quite unreliable. He knew nothing of his grandparents, who died in Ireland. Father was living when last heard from, four or five years ago. He is moderately alcoholic; a stableman by occupation. Mother died at fifty-five in Bellevue Hospital, New York City, from some unknown cause. One brother was drowned. One sister died of tubercular adenitis. No instance of epilepsy, insanity, or nervous disorder in any form is known to have existed among his relatives.

Patient stated that he was born in Ireland on October 12, 1884. He never attended school, but has learned to read and write a little. Childhood was uneventful, so far as known. He came to this country at the age of four, and at twelve or thirteen years of age began selling newspapers in the streets of New York. His occupational career since then has been chiefly that of a steamboat and longshoreman laborer along the docks of New York City. He said he enlisted in the Navy in 1907 or 1908, was not quite certain as to which year, at San Francisco, Cal. He served on the U. S. S. *Buffalo* as coal-passenger; was dishonorably discharged for drunkenness. He then re-enlisted and served as fireman, first class, on the *Milwaukee* for about three and one-half years. Says he got along well on the *Milwaukee*, until he got into his present trouble. He was convicted of sodomy and sentenced to prison for ten years, January 15, 1911. Patient did not see the discrepancies in the dates as given by him, but, as stated before, the history is quite unreliable.

A letter received from the War Department on June 28 requested identification of J. E. M. for the purpose of detecting whether or not he is the same man who under the name of Lee deserted from the Army, January 14, 1909. The photograph accompanying the letter was that of the patient.

He had measles and mumps during childhood, from which he made good recoveries. Gonorrhœal and syphilitic infection were denied. (Wassermann with the blood-serum negative.) During a bar-room brawl in Panama he was struck on the head with a table leg and rendered unconscious for fifteen or sixteen hours. This was some time in 1908. He thinks there was nothing more than a scalp wound, requiring no treatment beyond a simple dressing. For about a year after, headaches were present almost continually, occipital in location and of a tingling sensation. There was likewise a reduction of tolerance for alcoholics, since then two glasses of whiskey being sufficient to intoxicate him. He does not know whether there was any change in his mental make-up or faculties following this injury, as he paid no attention to this. He commenced to indulge in alcoholics at the age of eighteen or nineteen. He cannot give a detailed account of the extent, but, as a rule, he spent all his money not needed for living expenses for whiskey. He would become intoxicated every time he went ashore, stating that there was nothing else to do and no place to which he could go. Practice of onanism was denied. He claimed to have begun normal sexual intercourse at about the usual age. Strenuously denied sexual perversions, in spite of the fact that he is now serving a ten years' sentence for sodomy. He denied the guilt of this offence; insisted that he was never arrested before in his life, and believed the present conviction to have been a trumped-up affair because they must have gotten sore on him, although he cannot figure out why. Following his conviction for the above offence he was sent to the State Penitentiary at Concord, N. H. For a short while after he got there he got along well; was kept continually at work in the chair factory. He did not like this work, as he was subjected to the inhalation of the dust and shavings, and feared he would develop tuberculosis from this, and asked to be transferred to some other place. This request was finally granted him, and he was put to work in the kitchen. He states he did not get along well there; very soon got into some sort of trouble and was put into a dark dungeon, where he thinks he remained for about twelve months, strapped to the bed. He never saw the daylight during this time. He does not know why these strict measures were taken with him, but it is a fact that he was tied down. He had no idea of the onset of the present trouble, but stated that he complained frequently to the doctor of headaches and vomiting. The headaches were occipital in nature and severe at times. He could not recall his transfer to this institution nor the events which transpired during the first two or three days after his arrival here.

The medical certificate which accompanied him here stated: "Patient has been convicted of sodomy and is at present serving sentence for same. First symptoms became manifest about February 6, 1912. Came under the care of prison physician at Concord, N. H., State Prison with severe headaches. Previous to above date it is said there were the following records at above prison in regard to this patient: April 15, 1911, and August 10, 1911, he had convulsions. These are not described in detail. The prison physician at the time noted that patient showed symptoms of 'organic brain disease.' On February 26, 1912, he became violent, and has had to be restrained since then. For some time previous to that he had acted peculiarly. The symptoms immediately preceding his transfer to this institution are as follows: Has to be restrained to prevent violence to himself and others. Frequently suspicious when food and drink are offered him. At times noisy when he desires food and it is not given to him at once. Probable cause unknown. There is a vague history of head injury aboard ship in the tropics. Homicidal tendencies were present when the disease first became manifest."

Patient was admitted to this institution June 15, 1912, at 10.30 A.M. On admission he was carried in by two employees. His legs were shackled and he had wristlets on his hands. He was apparently unable to stand unassisted, and, when support was removed, fell to the floor. Pupils were widely dilated; internal strabismus of the right eye was present. Facial musculature was distorted, and he mumbled to himself in a low, indifferent tone of voice, over and over again, "Give me something to eat. I can't do it. Give me something to eat," etc., in a rapid monotone. He appeared to be in a deep stupor. He did not seem to realize his whereabouts, and attention could not be gained. He was totally inaccessible. When put to bed he became quite restless, rolled out on the floor, and was unable to assist himself back into bed. Musculature of legs was in a constant mild clonus, and the right foot was kept in position of talipes equinovarus. Pins pushed deeply into the skin all over the body caused no reaction. When food was brought to him he leaped upon it and finished the meal with extreme rapidity, stuffed his mouth full, never taking sufficient time for mastication or swallowing, and food was frequently expelled forcibly, probably from irritation of the air-passages. Questions addressed to him remained unheeded, but he kept up a constant mumbling in a low monotone, as described above. He was totally unable to stand on his feet unsupported, but when lying down his legs were moved about quite freely in an indifferent manner. When alone in the room he remained quietly in bed, head and face covered up with a blanket, but as soon as the room was entered he became restless, grabbing to those about him and holding on tenaciously. During his first night in the institution he slept well and was clean in habits. The following morning he was still inaccessible. He ate his breakfast quite voraciously, mumbling to himself all the time, "Give me something to eat" or "Give me something to drink." When water was brought to him he would endeavor to gulp the entire contents of the vessel at one effort.

During the day of June 16, the day following his admission, he was frequently seen sitting on the side of the bed with quite a pleasant facial expression, rubbing his arms and legs. When his room was entered, however, he at once began mumbling to himself similar phrases as those given above, became quite restless, grabbing at those about him and not paying any attention to questions put to him. The following day, June 17, he showed marked improvement; was very much quieter in behavior when approached; walked back and forth in his room quite unassisted and in quite a steady manner; was seen looking out of the window into the yard for about fifteen or twenty minutes. Upon being approached by any one his gait seemed to become definitely less steady, and diffused twitchings of the thigh and leg were noted. The strabismus which was present on the day of admission had entirely disappeared; pupils slightly dilated. In the forenoon of the 17th he asked for his clothes and to be allowed to go out in the court-yard for a walk. A few questions addressed to him were answered coherently and relevantly. He said, in answer to direct questions, that his name was J. E. M.; that he did not know his age; that he came off some ship. Said the name of the ship was *Washington*; that he did not know how long he was on that ship, but thought it was a good long time. Asked where he was now, he said he was in the brig. "Where?" "Don't know." Asked if he were crazy, he said, "No, sir." When he came here? "A year ago." Asked what was the matter with him. "Nothing, sir. They kept me tied up too much." Asked when his bowels moved last, he said, "About a week ago."

On June 19 he gave a coherent and connected account of his past life. He

talked freely and co-operated in every way with the interviewer. Requests were obeyed promptly and intelligently. Physical examination on that date showed him to be a well-built, well-developed white male. Face slightly asymmetrical. Skin was soft and smooth, free from eruption, and covered with numerous elaborate tattoo marks. Linear depressed scar in the occipital region. Muscle tone was good. Muscular power was good in upper extremities. On first being tested in the lower extremities said he could not resist very much passive movements; upon suggestion, however, the muscular power of the lower extremities became much stronger and equal to that of the upper extremities. Grip was strong and equal on both sides. Station and gait were unimpaired when a steady and erect attitude and firm gait were suggested to the patient; left alone, he was inclined to be slightly unsteady on his feet. With eyes closed and feet together, there was considerable swaying present; said he felt like falling over. Voluntary movements were performed well. He described accurately a circle, a square, and triangle in the air with either hand. Movements were steady and accurate. Coordination was slightly impaired in f-f and f-n tests; the termination of the act was accompanied by a slight tremor. The musculature of thighs showed a more or less constant clonic twitching. When attention was called to this he was able to control it to a certain extent. Upon assuming a sitting posture the twitchings ceased. He said it was due to weak ankles. There was no tremor of protruded tongue or lips when showing teeth; fine tremor of the extended fingers and forearm when extended; no tremor of facial musculature. There was no paralysis, but there seemed to be a slight weakening of the lower extremities. No atrophies or hypertrophies noted. The triceps and radial reflexes were definitely exaggerated. Upon tapping, the quadriceps tendon caused a brisk marked contraction of thigh muscles, followed by mild clonus. Tapping of one knee tended to set musculature of opposite knee in mild clonus of short duration. Knee kicks were definitely exaggerated. Tendo achillis exaggerated. No ankle clonus. Muscular irritability to mechanical stimulation increased. Superficial reflexes were normal, except plantar defence reaction was slight. Cutaneous sensibility was unimpaired: heat and cold readily distinguished. Light touches of pin pricks were felt and localized all over the body. Sense of position normal. No stere-agnosia in either hand. No excessive sweating. Eyes clear; irides brown; pupils round and regular, moderately dilated, reacted readily to all tests; eye movements well performed in all directions; no nystagmus nor strabismus. Vision — 20/30 in each eye, improved by glasses. Skin of vitreous clear; slight weakness of external recti; cornea clear; field of vision normal for white; both fundi normal except for slight hyperæmia. Smell, taste, audition, and speech unimpaired.

Mentally the patient was clear. He comprehended readily what was said to him, and his replies were prompt and relevant. He was disoriented to time. He stated that he knew the nature of this place; that he was told it the day before by a patient. Claimed to have total or almost amnesia for several months past during the year he was confined in the dungeon of the Concord Penitentiary. He had no idea of the trip from there down to this hospital. He did not remember his arrival, nor how he acted the first two days here. Stated that on June 17 he first began to notice things about him and to realize faintly where he was. Delusions or hallucinations could not be elicited as having existed at that time. He spoke of having been bothered at the penitentiary; of having been chloroformed; that they put stuff in his food, tried hard to get him out of the way,

and because they could not do it sent him down here. Said the doctor poured ether down his neck. He does not know the doctor's name, but he knew it was ether, he smelt it, and that is the reason he could not use his legs on arrival. He had no idea why he should have been treated thus, but thought perhaps they had it in for him. Auditory hallucinations could not be elicited. When asked if he ever saw anything, he said it was pitch dark in the dungeon and no one could see anything. Said the food tasted bad all the time, and sometimes made him vomit. On one occasion he noticed some powder in the beans. No electricity, no shocks, no outside influence was used on him. He did not know how long he was tied down in the dungeon, as half the time he did not know anything at all. Said they put needles in him, and pointed to some marks on his arm as a result of hypodermics. Facial expression denoted perfect satisfaction; said he felt fine and did not worry about anything, as he is not of the worrying kind. Said he had been treated well here. Insight was imperfect. When asked directly if he had been insane, he replied "No." When the various symptoms which he manifested on admission were described to him he was inclined to agree that if he did show these symptoms he must have been out of his head. Remote memory was not impaired, so far as could be determined. There was an ill-defined amnesia extending over several months past, and up to June 17, when he claimed to have first realized his whereabouts. Attention was unimpaired. He reacted well to the intellectual tests, with the exception of the arithmetical problems, which he did poorly. Replies to ethical questions showed a rather low grade of morality, perhaps due somewhat to ignorance more than to anything else. In his conduct on the ward he was absolutely normal following June 17. He spent his time reading and in conversation with the other patients. He was perfectly satisfied in his surroundings, frank in his conversation with those about him, and gradually gained more and more insight into his condition. He still persisted, however, in his statements that ether was poured down his back. Said he remembered this distinctly as having taken place while confined in the dungeon. He was then, however, inclined to think that probably they did not have it in for him, and probably they did what they thought was best. In conversation with him to-day, on June 19, four days after admission, he showed perfectly normal behavior in every respect. Was frank in his statements, spoke of the amnesia mentioned above, and no delusions or hallucinatory experiences or physical symptoms present on admission could be detected.

When finally confronted with the picture sent from the War Department for his identification he showed some degree of emotional reaction, stated that the picture was his, but persistently denied ever having been a recruit in the army. On the whole, he took the matter rather lightly and good-naturedly.

The history of this attack illustrates a typical case of hysterical psychosis. The marked stupor and confusion, the numerous and varied neurological symptoms, the sensory disturbances, especially the profound anaesthesia to pin pricks, the amnesia and rapid recovery after change of environment, all point to this diagnosis. It is a form of reaction frequently seen in prisoners, and has been designated, for want of a better term, as prison psychosis. At any rate, there can be no doubt as to the genuineness of the symptoms presented by the patient.

If we keep in mind that such a type of psychotic reaction is the result of the mutual interaction between an unstable, highly vulnerable psyche and an unfavorable environmental situation—in this instance prison environment—we understand the more readily the later history of this case.

On July 16, 1912, he was discharged recovered and turned over to the naval authorities to be returned to prison. Soon after his return to prison he was noted to be melancholy, uncommunicative, was not interested in condition of self or surroundings, had unsystematized delusions of persecution. Physically he was noted to be anæmic, showed general tremors when undergoing examination, reflexes were exaggerated, positive Romberg was present. The physician who accompanied patient to the Government Hospital for the Insane on his second admission stated that on the trip from Portsmouth Prison M. tried to assault a waiter in a restaurant in Boston, accusing the latter of following him. To the physician he said, while on the train, "Take your d—— eyes off me, or I'll brain you."

He was readmitted to the Government Hospital for the Insane on February 6, 1913. Physical examination on this admission was negative, except for some impairment of vision, for which he was given eye-glasses. Mentally he was found to be disoriented for time, though perfectly clear mentally, as was shown later in the examination; he said he did not know the name of the institution, though a minute later he gave correctly the name of the building in which he was located. He spoke in a very vindictive manner of the naval officials, who he said were persecuting him in various ways, and who he reckoned were then working to send him to some other d—— prison. On February 7, the day after admission, he wrote the following letter to the Secretary of the Navy:

HOWARD HALL, January 29, 1913.

MR. SECRETARY OF THE NAVY: *Rev. Sir.*—Will you kindly have some investigating, as I cannot have my life endangered. It is continually in my food, and times I have found the compounded powders in the air of my room choking me. Please let me know if you will do so, and I shall close.

Respectfully yours,

J. E. M., H. H. 5, Station L.

No hallucinations could be elicited, and his delusional ideas were confined to the naval officials. These, he said, were persecuting him; they sentenced him unjustly in the first place, and threatened to get

even with them. He answered the intelligence tests fairly well, but the examining physician noted that frequently he gave expression of consciously giving erroneous replies to questions put to him. Emotionally he was at first somewhat depressed, but later this disappeared. In his conduct he was inclined to be very troublesome, easily irritated, and fault-finding.

This disorder of conduct, however, became consistently more aggravated whenever he was in the presence of the physician. While he gradually became quite friendly with the attendants and willingly assisted with the ward work, he became quite abusive whenever an attempt was made to examine him by the physician. This became especially evident in December, 1913, when the physician who had him in charge during his first sojourn at the hospital again assumed charge of him. At that time the patient had been on excellent behavior for a number of months, and in his daily conduct showed no evidence of a psychosis. He continued, however, to air his delusional ideas whenever the physician attempted to examine him.

Everything went well upon the return of his former physician until December 22, 1913, when the latter attempted to examine him. The patient became very abusive and threatening in his attitude, began to air all sorts of bizarre persecutory ideas, and for about a month he continued in an excited and destructive state. At the expiration of this period he apologized to the physician for his conduct, said that he could not help going on a rampage once in a while, as it is all due to his mean disposition, and promised to conduct himself in an excellent manner if he were not returned to prison. This was early in January, 1914, since which time he has been a model patient in every respect. It is needless to say that he has not been given, since that time, any occasion for the development of another tantrum, and accordingly he remained free from psychotic manifestations.

He was a model patient after this, assisted willingly with the ward work, and on one occasion prevented the successful culmination of a daring plot on the part of several patients to escape from the institution.

Upon the recommendation of the hospital authorities and Dr. Sheehan, the naval officer stationed at this hospital, the remainder of this man's sentence was commuted, and he was accordingly discharged

on June 29, 1914. For about six months prior to this his conduct was exemplary, and, though through a considerable part of this period he enjoyed freedom of the grounds, he never showed the slightest inclination to abuse these privileges.

The salutary effect of the commutation of this man's sentence is quite obvious. On the other hand, I am equally certain that had this particular individual been returned to prison we would have had him again before long as a very seriously ill patient.

This case is extremely interesting from many points of view. In the first place, it gives us some insight into that highly inflammable, hair-trigger, emotional type of individual who, when thrown into a stressful situation, is very likely to go to pieces mentally. It is a type which is always very difficult to manage under a prison régime, and which in my estimation requires some intermediary place between a hospital for the insane and a penal institution. It is likewise quite irrational in our judicial disposition of these cases to impose a definite sentence. If our prisons are to function as reformatory institutions, it is quite clear that in this particular case no one can possibly foretell how long a period it would take to bring about a reformation. It is as if a man suffering from pulmonary tuberculosis were told that he must go to a place set aside for such as he and stay there, say, five years, irrespective of whether he is well at the end of that time, or whether he might have recovered long before the expiration of that period.

In this particular instance we were led to recommend a commutation of the unexpired term of the sentence by the following considerations: First of all, I cannot consider sodomy a crime punishable by imprisonment, unless the act was performed on a subject who either is incapable of giving his consent or becomes a party to the act against his will, by force. Anomalies of the sexual function are not crimes, but diseases, and as such should come under the purview of the physician, and not the agents of the law. In the second place, this man served in the navy with an excellent record for about two years, and, so far as we know, is not inclined to habitual criminality, and therefore deserved at least another chance. But these considerations are somewhat beside the issue under discussion. The case, to my mind, illustrates very well how closely malingering of mental symptoms is related to actual mental disease, how both manifestations are expressions of the same underlying diseased soil, and how difficult, nay

even impossible, it is to tell in a given case which of the symptoms are real and which shammed. On his first admission this man suffered from a grave mental disorder, from which, so far as anybody could determine, he made a complete recovery. Thrown back into the same stressful situation, he again finds himself unable to cope with it, becomes melancholy, suspicious, and mildly delusional. There is, however, considerable doubt in my mind as to the genuineness of these symptoms; unquestionably genuine is only the psychopathic make-up of this individual, which under stress permitted the development in one instance of a grave psychosis, in another of malingering.

Cases like the foregoing are by no means exceptions in criminal departments of hospitals for the insane. It is on account of this type of prison population that penal institutions furnish us with ten times as many insane as free communities.

Whatever convictions I possess concerning the subject of malingering were gained from a fairly extensive experience with insane delinquents at the Government Hospital for the Insane, and when I assert that I have yet to see a malingerer who, aside from being a malingerer, was likewise normal mentally, I do so with the full consciousness that my experience has been a more or less one-sided one. I mean to say that the material observed by me came to my notice within the confines of a hospital for the insane, and that my failure, therefore, to see the so-called pure malingerer is probably due to this circumstance. I shall not argue this point further, but merely state that it is true I have not had experience with the detected and convicted malingerer in the jail and court-room. I have had ample opportunity to study this same genus later as a patient in the hospital.

It would be an extremely interesting study to follow up the later careers of the so-called detected malingerers who are sent to prison and see how many of them later find their way to hospitals for the insane. A setting forth of these figures—and I doubt not for one second that the number is not at all inconsiderable—would not in the least have to be construed as a criticism of the diagnostic acumen of the original investigator. It would simply substantiate the truth of our contention that in the malingerer we see a type of individual who is far from normal, and in whom malingering as well as frank mental disease is not at all a rare phenomenon.

I have no doubt whatever that a considerable number of suspected malingeringers are annually sent to penal institutions, there to be later recognized in their true light and transferred to hospitals for the insane; else it would be difficult to account for the fact that mental disease, according to many authors, is at least ten times as frequent among prisoners as it is among a free population. Certainly this cannot be attributed to environment alone, especially not to that of our modern, well-conducted prisons. The reason lies chiefly in the type of individual who populates our prisons. A number of them are either insane when sent to prison or potentially so, and when thrown into a more or less difficult situation, such as imprisonment, readily develop a mental disorder. We see this illustrated very well in the highly beneficial effect which transfer to a hospital for the insane has upon these individuals. I am convinced that one would not be wrong in agreeing with the opinions quoted below, that malingering, as such, is a morbid phenomenon and always the expression of an individual inferior mentally. It may be looked upon as a psycho-genetic disorder, the mere possibility of the development of which is, according to Birnbaum¹¹ and others, an indication of a degenerative make-up, a defective mental organization. Siemens¹² says: "The demonstration of the existence of simulation is not at all proof that disease is simulated; it does not exclude the existence of mental disease." Pelman holds simulation in the mentally normal to be extremely rare, and he always finds himself at a loss to differentiate between that which is simulated and that which represents the actual traits of the individual. Melbruch¹³ holds that simulation is observed solely in individuals more or less decidedly abnormal mentally, because in the great majority of cases, if there does not actually exist a frank mental disorder, these individuals lack in a marked degree psychic balance and are constantly on the verge of a psychosis. Penta, in a most thorough study of the subject of malingering, likewise comes to the conclusion that it is always a morbid phenomenon. It is a tool almost always resorted to by the weak and incompetent whenever confronted with an especially difficult or stressful situation. It is, therefore, almost exclusively seen in hysterics, neurotics and other types of psychopaths, in the frankly insane, and in grave delinquents.

With these remarks concerning malingering in the supposedly mentally normal, we may turn to a discussion of that large group of

borderland cases which furnishes, outside of the frankly insane, the great majority of malingers. I am tempted here to borrow Bornstein's classic description of the type of personality to which I am referring. According to him, these individuals come into the world with the stamp of a hereditary taint, with certain somatic anomalies (ears, palate, formation of skull, growth of hair, etc.), and already as children show those psychic characteristics which are decisive for their individuality. They are, above all, characterized by a marked hypersensitiveness and by a lack of harmonious relationship between the various psychic functions. This disharmony finds its expression chiefly in the predominance of the emotional element over the intellectual and in the entire subordination of the latter to the former. Their feelings, furthermore, express themselves in an abnormal manner, both as regards their intensity and duration. The emotional reaction is either excessively strong or, on the other hand, disproportionately weak compared with the stimulus, and in spite of the extravagance of the expression it quickly passes over or remains with an excessive obduracy for a disproportionately long time. Notwithstanding the apparent intensity of the outbreak in the former and its tediousness in the latter case, these emotional upsets almost always lack real depth. They are usually very superficial, insufficiently grounded, rather dependent upon accident; transitions from one extreme to the other make up the daily experiences of these individuals—from intense love to burning hatred, from deepest reverence to an irreconcilable disgust, from unshakable loyalty to brutal treachery. They lack energy and initiative, are undecided, vacillating, and inclined to self-reproach. The domination of the emotional sphere and the frequent incongruity and discord between the various forms of emotional expression frequently lead to the development of morbid doubts, morbid fears, a morbidly exaggerated egotism, and sensitiveness which leads them to scent everywhere personal injury and insult. Finally, they frequently show an overdevelopment of the sexual instincts and various deviations from normal sexual development. Many of them seem to lack totally in the power of reason, but act entirely upon impulse, upon the mere feeling that this or that proposition is true. Many others show a pronounced tendency to a metaphysic brooding and day-dreaming and to the transformation into fact of the dreamed air castles, without any regard to the iron logic of life which

they cannot satisfy, with which they either will not or do not know how to reckon. Turning their backs upon the demands of life, centred in self, given up to the kaleidoscopic play of their emotions, which are of short duration, imperfect as to depth, varying in intensity, and depending upon any and every external influence, these individuals are very uncertain in their opinions, judgments, and motives for action. They go through life without any direction, without any guiding idea, without initiative, and without will, incapable of any kind of systematic labor, yet at times ready, under the influence of a temporary effect, to sacrifice everything in order to carry out what later on proves worthless and vain. Lacking in sure criteria and guides, they are slavishly dependent upon momentary external influences, and under unfavorable conditions of life suffer want and misery and give way to temptation, frequently falling into a life of vagabondage, drunkenness, and crime. In prison they often develop mental disorders, are looked upon as malingerers, and oscillate between prison and the insane asylum, only to begin the old game over again so soon as they again come in contact with life.

It is little wonder, then, that the psychiatrist in dealing with these unfortunates frequently finds himself at a loss to tell where health leaves off and disease begins. The psychoses which these individuals develop are in the great majority of instances purely psychogenetic in character, one of the many distinguishing features of which is a marked susceptibility of the symptoms to be influenced by external occurrences. This tendency of the symptoms to shape themselves in accordance with occurrences in the immediate environment frequently leads to the suspicion of malingering, because there seems to be altogether too much discretion displayed by these alleged insane.

I have elsewhere¹⁴ reported a series of these cases and entered into a detailed discussion both of the personality and the nature of the psychoses from which these individuals suffered. Most of my cases had been both in prison and in hospitals for the insane on more than one occasion, every arrest and imprisonment having been apparently sufficient to bring out a fresh attack of mental disease.

The following case is fairly illustrative of this type:

J. H., white male, age twenty-seven on admission, November 13, 1913. While serving a year's sentence at the Portsmouth Naval Prison for fraudulent enlistment the patient told the authorities there that on August 7, 1909, he had

murdered a girl in Rochester, N. Y. He described the murder in great detail, stated that he met the girl in one of the Rochester cemeteries, attempted a sexual assault upon her, and when she resisted he choked her to death. He stated that he did not mean to kill his victim, but that he had inflicted the fatal injury before he was aware of it. It was remorse, he said, and the desire to expiate his crime which prompted his confession. He persisted in this confession until the naval authorities were persuaded to discharge him and turn him over to the civil authorities of Rochester, N. Y. Upon arriving there an alibi was easily established, freeing the patient of all suspicion of the murder, whereupon it took a good deal of investigation on the part of the authorities to establish the patient's real legal status. It was finally decided that he belonged to the naval authorities, and he was accordingly returned to prison and was given an additional sentence of a year for this fraud, which he began to serve on December 13, 1909. While waiting this new sentence he assaulted a master-at-arms, who he claimed abused him, and for this offence he received an additional five years' sentence. He served this sentence until his first admission to this hospital on July 16, 1913, on the following medical certificate: First symptoms became manifest in 1910. The patient manifested fixed delusions of having murdered a girl on August 7, 1909. Present symptoms: Fixed delusions of a self-accusatory nature, delusions of persecution; accused a medical officer whom he had never seen before as being among those who were hounding him. Becomes excited, violent, profane, incoherent and obscene in speech, and attempted to assault the officer. He attempted suicide on February 15, 1910, while at Concord, N. H., State Prison.

During the patient's first sojourn at this hospital he conducted himself in an orderly manner, and, aside from the expression of mild persecutory ideas with reference to the prison personnel, he was free from psychotic manifestations. On only one occasion was he involved in some trouble while here, which was entirely his own fault. He was discharged on September 28, 1913, diagnosis "Not insane, psychopathic constitution," and returned to the U. S. S. *Southery* Prison Ship. Upon his return there it was noted that he was suffering from a double benign, tertiarv, malarial infection, which it was maintained he had contracted in this hospital.

He was readmitted here on March 15, 1914, on a medical certificate which stated that the patient said he snuffed cocaine prior to admission to the navy; that the murder he believes he committed was due, according to his statement, to the refusal of the victim to permit sexual intercourse. The patient has at present the same fixed delusion of having committed this murder in 1909. He wants to expiate his crime to escape those who are continually hounding him. When irritated he flies into a rage, cries, tries to do himself injury, and talks incoherently. For no cause, while working in the yard, he struck a fellow prisoner and pursued him with a shovel. During maniacal attacks he can be restrained only with much difficulty, smashes furniture in his cell, and is slovenly in habits. Complains constantly of numbness and needle-like pains in vertex. As a probable cause, prison routine was given. It will thus be seen that the same fraud about the murder, which served at one time to bring him an additional sentence of a year, was considered at another time one of the symptoms which justified his return to this hospital. The patient's version of the reason for his return is as follows: Soon after his transfer to Portsmouth the guards began to annoy him, calling him crazy guy, hard guy, etc. He also got into trouble with

the sergeant because the latter cursed him, began to express the same ideas about the murder, and thought this was the reason they sent him back.

The mental examination and physicians' notes made during his second admission showed no gross psychotic symptoms. The patient still maintained that he actually committed this crime in Rochester, and related it in great detail. He stated that when he was confined in Portsmouth Prison he became remorseful over this crime and decided to confess. His conduct during his second sojourn here was exemplary. He appeared at conference on April 20, 1914, and a diagnosis of psychopathic character was made. The opinion was expressed that it was extremely difficult to pick out the truth from the abnormal elements in the patient's story, and that there were a great many things in the general emotional reaction of the patient that fitted into the story. It was believed that the patient had a sort of determination to get into difficulties for the sake of posing as a martyr and all that fits in with the grandiose element of his character. Being oppressed, he is taking it in a way that is very satisfying to his feelings of importance. Later during his sojourn here the patient became rather anxious to be returned to the penitentiary, stating that he had given up all the ideas which he had expressed on admission, and assured the physician that he was malingering on both occasions of his transfer to the hospital. He stated that his chief anxiety which permitted him to malinger was that he might be given additional sentences for his inability to get along in the penitentiary, and he thought the only way to avoid this would be to be pronounced insane. Patient was discharged from here to be returned to the penitentiary on July 9, 1914.

The patient was admitted to this hospital on November 13, 1914, on a medical certificate which states: Diagnosis—Constitutional psychopathic state, not in line of duty, existed prior to enlistment. He was in the Government Hospital for the Insane in Washington for about four months this year. His condition is not improving. A sudden outburst occurred two days ago and he has been under close confinement since. He struck a recruit and after confinement in a cell destroyed a chair and had to be restrained. His retention in the prison in these barracks is not deemed desirable.

Nothing essentially new has developed in the case during this admission. The patient has from the first been quiet, well behaved, a willing worker in our industrial department, and free from signs of mental disorder. Of course, he again blamed the guards at the prison for the trouble which he became involved in and which necessitated his third admission to this hospital. A letter received from the naval medical officer stationed at the marine barracks, Norfolk, Va., the place of the patient's last confinement, was to the effect that while under observation there the patient made the impression of being a good worker, and normal in every way, except that he had a quick temper, and that the only difficulty they had noted was on the occasion when he assaulted the man at the prison, who appeared against him at the mast, and that after this scene he was put in the brig, where he threatened to kill any — man who came near him. The medical officer was impressed with the fact that the patient was feigning insanity.

The patient's version of the circumstances which led to this last admission is as follows: He was reported to the commanding officer by a guard for some alleged minor infraction of discipline, of which he claims not to have been guilty. After the guard was through making his report the patient asked the commanding officer whether this alleged offence would prevent his release in July of this year, as he

had been promised if he conducted himself well. The officer replied that it certainly would, upon hearing which he could not restrain himself, became quite overwhelmed with anger, and struck the guard who reported him. His behavior which necessitated his readmission took place following this episode. The patient dwells upon the fact that prior to this episode he behaved in an excellent manner under the prison régime for about four months, and that during his sojourn there he was practically a model prisoner, which was true.

He certainly has manifested no signs of mental disorder during his present admission, and still insists that he malingered all of the symptoms which led to his former two admissions because he feared more punishment at the hands of the naval authorities unless he was considered insane.

Anamnesis.—The patient comes from a family of farmers in mediocre circumstances. Grandparents are in Bohemia, and he knows nothing concerning them. Father died of Bright's disease; was alcoholic. Otherwise family history negative.

Patient is uncertain about the time and place of birth, but believes he is about thirty years of age at present. He entered school at seven or eight, but proved to be a confirmed truant, and his father finally had to take him out of school entirely. He was in the habit of running away from home and school, wander about the country, where he would stop at different farm houses, claiming he was an orphan and without a home, until his father would discover him and bring him back home. After giving up school definitely he worked as a farm hand, earning the ordinary wages paid for this labor. He changed places frequently, was a spendthrift, and assisted his parents financially very little. This mode of existence he led until 1904, when he forged his father's name to a \$25 check and received a five-year term of imprisonment, part of which he spent in the Minnesota State Reformatory and part at the State Penitentiary. In the fall of 1907 he was paroled, but broke his parole by enlisting in the army, under the name of Kimlicka, at Fort Snelling, Minn. About a month later the fraud was discovered through his father. He was given a dishonorable discharge and sent back to the penitentiary, where he remained about six months. At the end of this time (December, 1907) he was granted another parole, and went to work for a man named George Hall, on a farm in Minnesota. He was there nearly two months, when he cut his foot while chopping wood. He says that after this accident he was not able to do much work, and his employer did not seem to like to have him hanging around, so he went back to prison, which he says paroled prisoners were supposed to do when they lost their jobs. As his time was up in two months, the prison authorities made no effort to get him a new job, but kept him there until his sentence expired. He left the penitentiary in March, 1908, and went home for a couple of weeks. He then went to Minneapolis and enlisted in the navy under the name of James Hall, but did not tell the recruiting officer about his prison or army experiences. About four months after he enlisted he was caught with another sailor in civilian's clothes in Newport, R. I. This was against the navy regulations. Patient says he did this because they did not allow him in dance halls, theatres, etc., in sailor's clothes. He used to keep his civilian's clothes in the Y. M. C. A. building in town, and would change there. He received a dishonorable discharge for this escapade. He says he had one court-martial before that in July, 1908. He then went to Providence, R. I., and enlisted in the army under the name of Herman Hanson. In Fort Andrews, Boston Harbor, patient was caught in civilian's clothes again, and got into a brawl with a sergeant. Patient says the sergeant was drunk and provoked the quarrel. As a

result the patient was put in the guard-house, receiving a sentence of six months and dishonorable discharge. Two months of this sentence he served at Fort Andrews, and the rest at Governor's Island. After being discharged, he hung around New York City for a week, and then went to Rochester, N. Y. This was in May, 1909. Here he worked on a farm of Mrs. McCale, and the following month, June, 1909, he enlisted in the Marine Corps under the name of Vilt. He was sent to the Brooklyn Navy Yard, but after a week's sojourn there he got into trouble on account of not having his rifle cleaned. He feared that he would be reported for this and his previous frauds might be discovered, and he decided to desert. He returned to Rochester, worked for Frank Little and Roy Fritz. Soon after he enlisted in the army, this time under the name of James Hall, but was rejected on account of some nasal defect. This was at Columbus Barracks. After being rejected in the army he enlisted in the navy and was sent to Norfolk, Va. He was here likewise rejected on account of this defect, and while awaiting his discharge papers it was discovered that he had fraudulently enlisted. He was court-martialled and given a year. This was on November 20, 1909. His career following this has already been outlined.

If one takes into consideration the entire life history of this individual he will have little cause for surprise at the resort to malingering by this man when he found himself under an especially stressful situation. That he maledgered every frank psychotic symptom which he manifested is beyond doubt a fact, even though he would not have admitted so much himself. But one would commit a serious error if on this account he would consider the man normal mentally. From childhood on this man has manifested traits of character which are absolutely psychopathic in nature. Among these may be especially emphasized the confirmed truancy and running away from home, the aimless, constantly-changing industrial career, the inability to pursue any line of endeavor towards a definite goal, the early criminalistic tendencies, the repeated commission of military offences in spite of the frequent punishments, and, lastly, his total inability to adjust himself to the prison régime, resulting in serious mental upsets which necessitated his admission to a hospital for the insane on three different occasions. It is perfectly natural that he should resort to malingering of mental disease in his last attempt at evading a stressful situation. Malingering is frequently the only means of escape for such as he, unable as they are to meet life's problems squarely in the face.

It is of no particular value to add more cases illustrative of the type of mental make-up which leads to malingering, especially since there exists a more or less complete unanimity of opinion on the subject among present-day psychiatrists.

CONCLUSIONS

The conclusions which may safely be drawn from the study of malingering as it is manifested in criminal departments of hospitals for the insane are as follows:

1. The detection of malingering in a given case by no means excludes the presence of actual mental disease. The two phenomena are not only not mutually exclusive, but are frequently concomitant manifestations in the same individual.
2. Malingering is a form of mental reaction manifested for the purpose of evading a particularly stressful situation in life, and is resorted to chiefly, if not exclusively, by the mentally abnormal, such as psychopaths, hysterics, and the frankly insane.
3. Malingering and allied traits, viz., lying and deceit, are not always consciously motivated modes of behavior, but are not infrequently determined by motives operative in the subconscious mental life, and accordingly affect to a marked extent the individual's responsibility for such behavior.
4. The differentiation of the malingered symptoms from the genuine ones is, as a rule, extremely difficult, and great caution is to be exercised in pronouncing a given individual a malingerer.

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Surgery

WAR EXPERIENCES AND OBSERVATIONS IN GERMANY AND FRANCE

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GENERAL REMARKS ON MODERN WAR SURGERY

IT IS hardly likely that any one familiar with the results of war surgery in the days of lead bullets and unprotected shells of large calibre will contend that the average type of wound produced by the weapons of to-day is less serious or prognosis more favorable as the result of the perfected modern implements of war. Statistics vary so for different localities and in different branches of the service that it is hardly possible to arrive at any definite conclusion with regard to one or the other detail. We are, however, fully convinced that not the improvement in fire-arms, but the advances in surgery and the prompt recognition of essential factors in the type of wound, will be responsible for any changes in the demands that may be made on the physician or in our views on sepsis and asepsis that may take place after this war is over. The active participation of world-renowned surgeons in the care of the wounded in nearly all the belligerent countries is a guarantee in itself that our expectations of the great advances that will be made in all the realms of war surgery will not be disappointed.

My experiences are limited principally to Germany and France. Happily, in both these countries the death-rate among the wounded soldiers sent back from the front is relatively low. Statistics from the Central Bureau in Berlin show that only 8 per cent. were incapacitated for further service, 36 per cent. being able to resume field service and 56 per cent. fit for garrison duties, constituting the nucleus for future substitute troops. Professor Czerny, the renowned Heidelberg surgeon, claims that in his experience the incapacitated numbered only 6.5 per cent. Everything possible is being done for the comfort of this unfortunate class of patients, even while they are still in the hospital. In Germany, especially, much has been accomplished in this

direction. The blind are taught to read in Braille, and are being trained in some suitable occupation. Prostheses are provided to replace lost members, and commissions have been especially appointed to consult with and advise these stricken creatures as to the best means of their remaining useful citizens and wage-earners. It may be said, in passing, that the enemy's wounded are no less carefully tended and looked after. The Red Cross Society in Germany, mindful of its lofty mission, distinguishes not between enemy and friend; it ministers to the wounded without distinction. Nor are there any special regulations governing the afflicted of the opponent's camp. The sentinels stationed in front of their pavilions are perhaps the only indications that the occupants are prisoners of war. And not infrequently these signs are also wanting, especially in the wards where friend and foe lie on adjoining cots, and in delightful camaraderie these brave soldiers are conscious of no inimical feelings. They all in common yearn only for speedy restoration to health and an early cessation of this horrible conflict.

In arranging the war hospitals in Germany, as in Strassburg, for example, the psychopathic clinics provided special wards for war psychoses. Similar provisions, it is said, have also been made in France. The first group, comprising alcohol delirium, hysteria of fear, etc., required little or no consideration. The second group includes hysteria from shock after battles, and such mental disturbances that ordinarily result from severe cataclysms. While numerous mental conditions arose as a consequence of strain after prolonged fighting, concussion from bursting shells (cannon deafness), and the like, it cannot be said that the war has developed a particular type of mental derangement. Cases presenting symptoms of neurasthenia and psychosis during the war, excluding, of course, those directly referable to severe injuries to the head or the brain, occurred almost without exception among individuals of nervous temperament, so that the incidents of the service—shock, excitement, fatigue, etc.—cannot be considered the cause of the mental disturbance, but the final contributing and favorable factors for its development.

HYGIENE

Some remarks on serum treatment and prophylaxis may not be out of place at this point. Dr. Hoffmann, of Berlin, has justly remarked that aiming to prevent the outbreak of disease is a loftier

ambition than trying to cure it. And with this as a guide, the surgeon and hygienist of to-day, in his eager quest for serum cures, must be careful not to neglect the search for the cause of the disease he sets out to cure. Professor Nocht¹ points out the interesting relationship between typhus and parasites, and it scarcely needs an argument to emphasize the importance of eliminating the parasite as the primary step and curing the disease as the secondary consideration in the treatment of this plague. Recent investigations have shown that typhus is carried not only by the adult body louse, but infection may also be provoked by the second generation (the nit). Up to the present time no success has attended the attempts to cure the disease by medication, such as quinine, methyl blue, salvarsan, arsalth, convalescent serum, etc. All efforts must unquestionably be directed toward destroying the vermin and its brood. Xylol, benzine, asafoetida, iodoform, etc., and sulphurous ether, as the most radical remedy, have proved useful. Thanks to the generally good hygiene among the troops, the death-rate from epidemics has been considerably reduced. Early diagnosis does much towards decreasing the chances for the second eventuality, the outbreak of a general epidemic. The importance of bacteriology as an aid to clinical observation cannot be overestimated.

Only such countries are immune against smallpox epidemics in which, as in Germany, for example, vaccination is compulsory and revaccination is systematically carried on. During the period from 1896 to 1913 the death-rate from smallpox in the various countries was:

Germany	0.05 per cent.	(General repeated compulsory vaccination.)
England and Wales ...	1.65 per cent.	(So-called law of conscience.)
Austria	2.94 per cent.	(No compulsory law, but vaccination certificate required for admission to schools.)
Switzerland	0.49 per cent.	(Seventeen cantons have no compulsory law; 8 require it for admission to school)
Russia	52.0 per cent.	(No compulsory vaccination law.)

Antityphoid vaccination has yielded excellent results. The treatment consists in three subcutaneous injections at definite intervals;

¹ *Münch. med. Wochenschr.*, Jan. 12, 1915.

general irritation symptoms rarely supervene. In Germany, soon after the outbreak of the war, all the troops received prophylactic treatment at suitable intervals, while in France the greater part of the army had undergone antityphoid vaccination in June, 1914. In addition to this, preventive treatment with Lumière's keratinized pearls was instituted among the French troops during November, 1914. It may safely be assumed that the entire French force will gradually be immunized against typhoid infection. Similar anti-cholera treatment seems practicable, too, the reaction phenomena being still less than that of typhoid vaccination. Antidysentery serum, which was used both as a preventive and a cure, while it proved useful, its protective influence was not altogether reliable; besides which, the reaction is so much more pronounced than with the cholera and typhoid serums that neither in Germany nor in France was the treatment made compulsory. The results of antitoxin treatment for tetanus differ considerably. While in a station at Strassburg, where prophylactic injections were mainly used, the results were good, they were not so favorable in other places. On the other hand, in the Tenth French Army Corps, under the direction of the well-known surgeon Doyen as physician-in-chief, the cures amounted to 80 per cent. Doyen attributes these astonishing figures to a new method—lumbar injections of the serum and changing the position of the body after the injection. The hygienic conditions among the troops of both countries is vastly better than it formerly was, and it is probably to this circumstance that we have been spared epidemics, in the true sense of the term, during the first year of the war.

SCIENTIFIC CONGRESSES IN THE FIELD

The scientific meetings conducted in the field in the enemy's country bear testimony to the thoroughness and forethought of German military training. These meetings are held at army headquarters every Saturday, and are attended by all the doctors who can get away, many of them taking long and tedious journeys in order to listen to interesting and instructive talks by Schyernig and others. At such meetings held at Namur, in October, both Belgian and German physicians were present and took part in the proceedings. Similar sessions were held in Lille, under the leadership of Professor Sauerbruch, of Zurich. War meetings were also established in Paris

by men prominent in the profession, such as Dastre, Delorme, and Doyen. With these *coryphées* of science in attendance at these gatherings it may be taken as a foregone conclusion that science will be enriched and important advances made in the treatment of the sick and wounded.

HOSPITAL SERVICE

There is no doubt that in Germany the organization of this branch of the service is the most efficient. While sanitary conditions in France are much better now than they were in the early months of the war, the improvement is entirely due to the deftness of the Frenchman in applying the good practices that he had observed in his opponent, and these were not few. The service in the German army is arranged as follows:

In the front ranks—the trenches, as the war is at present being carried on—the doctors among the troops give only first aid to the injured and supervise their removal to the main dressing station (*Field-lazarette*), where the fate of the patient, so to speak, is decided. In other words, proper bandaging is applied here, ligature, constriction, splints, etc., putting the patient in condition for transportation to the field hospital. The more severely wounded are given morphine in maximal doses, so that they reach the field hospital in a sort of seminarcosis. Before leaving the ambulance station each patient is provided with a chart indicating the extent and nature of his wounds, treatment received, whether an Esmarch or other bandage has been applied, how much morphine has been given, etc. In this way the patients are quickly classified, so that there is little danger of the slightly wounded receiving too much attention, while the more severe cases run the risk of bleeding to death for the lack of prompt attention. Among the most admirable arrangements in the German army are the portable hospitals, and Germany owes much, very much, to their excellent management.

The wounded, as they arrive, are, first and foremost, sure of a bed, of good, nourishing food, and good nursing. It is only in the most urgent cases that operation is resorted to at once. As a rule, surgical intervention is postponed until after the patient has had a chance to rest and recover, in a measure, from the first shock of his wounds, when he will be better able to withstand the shock of anaesthesia. Morphine is also here used as much as possible. It is not

difficult to picture to one's self the long marches and the privations that usually precede a great battle, and the comfort that good and prompt attention gives to the worn-out, wounded soldier can readily be imagined. His greatest requirement at this time is quiet and rest. It is therefore important that these field hospitals be located in as sheltered a spot as possible. It is, of course, not feasible to place them beyond the firing line; and, considering their close proximity to the field of action, one can not but admire the serene calm with which the surgeons in charge perform their tasks, even taking time to note the psychology of the wounded.

All suitable cases are transported as promptly as possible to the more inland hospitals, reserve hospitals stationed along railroad routes or, whenever possible, to the one in the home town of the patient. The trip is usually made in especially-equipped automobiles, and it is truly remarkable in what good condition some of the more seriously wounded arrive at their destination.

This branch of the service in France, according to the rules of April 26, 1910, is about as follows:

Chirurgia or ambulances.
Section d'hospitalization.
Evacuation hospital.
Isolating hospitals.

Many of the ambulance hospitals, patterned after the German field hospitals, could be seen during the past months, comprising the material from the section d'hospitalization and made up of the personnel of the chirurgia and of companies of stretcher-bearers.

The field-Röntgen wagons have proved of inestimable value in the treatment of the wounded. They are so cleverly constructed that an X-ray can be taken at any time, and each army corps is provided with this ingenious adjunct to the field hospitals. Special mention must also be made of the field laundry. This is composed of four wagons which, when brought close together, form a platform, an awning being stretched over the whole. Driers, disinfecting apparatus, and the provisions made for softening the water make this a particularly useful part of the field equipment. These laundries have a capacity of one to two tons a day of wash.

The health supplies are sent to the front through the branch supply departments, which receive their goods from the main commissary

department, which have been sent to the latter from the home town of the respective army corps for which they are intended. Distributing centres are stationed principally along railroad lines. The supplies include not only medicines, bandages, etc., but tents, wagons, and the like. The base hospitals, of course, forward these things to the field hospitals, and these again to the dressing stations. Up to the present time both the hospital corps and the field ambulance hospitals have proved fully adequate, both being close enough to the firing line and sufficiently protected to provide quick transportation from the field of the wounded, and prompt first-aid attention. There was rarely any overcrowding. On the whole, the equipment of these hospitals is quite complete. Although once in a while an operator finds himself in want of this or that particular kind of instrument, there can not be said to be a dearth of tools. The supply of bandages is especially noteworthy as to quantity, quality, and the manner in which they are packed. This has been especially commented upon by all the eminent authorities who have been actively engaged in hospital work. Some of the surgeons use papier-maché splints, others wire-braid splints, and others prefer plaster-of-Paris.

THE WOUNDS

The wounds comprise those made by bayonets, shrapnel, hand grenades, bomb-shells, dum-dum bullets, and the arrows of the aéroplanes. The nature of the wound depends on the angle of contact of the bullet, its size and shape, on the one hand, and on the tension of the wounded tissues, the cavity, and the vessels affected, on the other hand. We may say that the German missile is the most humane. The French bullet, being soft, has a tendency to deflect (especially by the bending of its nose) when striking a hard surface (this is more especially true of shrapnel), while the action of the grenade and bomb-shells is altogether uncertain and variable. The aéroplane arrow represents an entirely new weapon. It consists of a piece of steel about 15 centimetres long and having the thickness of a lead-pencil. Its posterior end is cut into a square; its pointed end being the heavier, it must necessarily fall perpendicularly. When projected from a height of, say, 1500 metres, it falls at a rate of 200 second-metres with horrible effect. While it often strikes its intended victim's helmet and glances off, it not infrequently lands on the shoulder and

simply penetrates into the deeper tissues, doing but little harm. There are some cases on record in which the arrow entered the side of the breast and penetrated subcutaneously to the external malleolus. More often, however, the wounds inflicted by this modern weapon are much more serious, death ensuing from spontaneous hemorrhage. Autopsy in a case in point showed that the arrow had entered the left supra-clavicular fossa, penetrated the lungs, the peritoneum, the spleen, the colon, and the pelvis, and had made its exit through the knee-joint.

Are dum-dum bullets being used in this war? We have already remarked that the bullets in use in the German infantry, consisting as they do of a single piece of lead with a nickel envelope, are the most humane munition in this war. The French missile is a massive one, composed of pure copper, while the envelope of the English one is much thinner and much less resistant than the German one, and contains two different kernels, a round one, composed of a light, hard metal in the pointed end, with the main ball of lead, about 2 centimetres in length, behind it. Thus constructed the envelope of the projectile must necessarily burst as it strikes a hard surface, the physical reasons for which are obvious. For the same reasons the heavier leaden ball pushes to the front, when the flight of the missile is interrupted, this taking place with an enormous force, it bursts through the thin covering and enters the body as a soft, plastic mass. Furthermore, owing to the heat generated by the flight of the missile, the lead frequently melts and bursts in a hot shower.

Various authorities—Stargard, of Hamburg; Sauerbruch, of Zurich, and others—have observed that the soldiers frequently clip off the ends of the bullets with a pincers-like arrangement attached to the butt-end of their muskets, thus increasing the cruel effect of these missiles. It is hard for neutral peoples to believe that the very nation that boasts of its humanity should be the one to make use of this, the most cruel munition of war found among the European armies. In contrast to the English bullet with its double balls, the German, Belgian, and Russian missiles contain only lead. The dum-dum action of the normal English bullet is self-evident, any particular interpretation of the word "dum-dum" being a secondary consideration. Army surgeons are correct in defining only such wounds as dum-dum wounds where the missile was found and identified. The bullet of simpler construction may also inflict dum-dum-like injuries,

especially when fired at close range. In modern trench warfare, where the opposing sides are sometimes as close as fifty to thirty metres or less, the most frequent wounds are those produced by this close-range infantry fire. It is therefore useless for Germany now to protest against the inhumane English bullet, but so soon as open-air battles are resumed this atrocious English missile will again come into its own.

The effect of the direct bullet (*Querschläger*) is very much like that of the dum-dum bullet, especially when the flight of the missile is intercepted and, glancing off a hard, smooth surface, it strikes the body squarely. The resulting wound is a horrible, wide, gaping, deep, penetrating, destructive tearing of tissues. About 40 per cent. of the wounds in the present war are inflicted by artillery weapons, a marked increase over the figures of former times. The action of the so-called indirect projectile is enhanced not only by the wide path made by the bullet, but by the infection produced by the particles of earth, shreds of clothing, coins, bone, splinters, etc., that it carries with it. The "cold" injures—stab wounds, blows, and also bites (a favorite method of attack of the African combatants)—are less dangerous; the last-named, however, are exceedingly painful. The recent increased bitterness of feeling has brought about a notable increase in this type of wound. Sauerbruch saw a patient who had been bitten through his uniform by a Nubian, the scapula having been torn away for an area of about 20 centimetres in diameter.

Some miraculous cures have been reported. Infection, of course, is the greatest source of danger. The forethought of the Germans is evidenced by the fact that each and every soldier is provided with two packages of bandages, so that when circumstances permit he is in a position to forefend infection by the prompt application of the sterile bandage. Treatment, of course, is as various as the type of wounds. But it may safely be said that simpler methods are now taking the place of the disinfecting treatment of former days. Mastysol is a favorite bactericide, which at the same time prevents the slipping away of the bandage. Iodine solutions are used for disinfecting the tissues immediately around the wound. The results obtained with balsam of Peru vary so that it is not possible to draw any conclusion as to its beneficial effects. The open treatment is the one generally used for very severe wounds. Instead of antiseptic tampon-

age, which requires frequent changing, so painful to the patient, Dr. Brun, of Luzerne, uses a finely-divided iodine solution mixed with glycerine as a spray into the open wound. He attributes the brilliant results reported from his Strassburg hospital in no small measure to this treatment. Sauerbruch, one of the surgeons most frequently consulted, offers a new and interesting theory. He holds that the primary necrosis and not the secondary infection is responsible for the unfavorable prognosis of severe artillery wounds (gas-phlegmon, etc.). He has had hardly any fatal septic cases since the introduction of opening up the wounds as a routine in his department. Delorme, the French surgeon, recommends injection of superoxide of hydrogen for the treatment of gas-phlegmon.

Tetanus infection has already been discussed under the subject of hygiene.

Gunshot wounds must be differentiated into grazing wounds, deep wounds, penetrating and superficial wounds. The deep wounds (*Stechschuss*) is inflicted by shrapnel, the projectile being removed by means of the electromagnet, which draws it up to the subcutaneous layer, whence it can easily be drawn out through a small incision. Doyen, Dastre, Brun, and others have had some very nice results with this method.

In conclusion, we shall consider the following types of injuries to:

1. Soft parts, to vessels, and to nerves.
2. Head—(a) the face, (b) the cranium.
3. Chest.
4. Abdomen.
5. Spine.
6. Fractures of the extremities.

The injuries to the soft parts constitute the main contingent of all wounds; they usually heal quickly, and the soldier is fit to reenter the service within two or three weeks. Diffuse infection frequently occurs in the jagged wounds inflicted by shrapnel and bomb-shells. Gas-phlegmon, so frequent in the beginning of the war, is a rare occurrence these days. The more deep-seated injuries to the soft parts present the typical picture: the aperture of entrance is usually small, round, and clean cut, the average aperture of exit being somewhat larger and frequently ragged. The hand wounds are very often cruciform in shape—a fact observed by Brun and others. It is inter-

esting to note that about 70 per cent. of the less severe wounds are inflicted on the left hand and left arm by rifle bullets. This was a fact already observed during the Balkan war, and is explained by the position in the trenches. The soldier balances himself on his left hand as he emerges from the trench, and uses his left hand for certain defensive movements.

Severe hemorrhage as a direct result of the wounds is not a frequent incidence, while secondary hemorrhages occurring in the hospitals are usually not serious. The formation of aneurisms is a more frequent consequence of the wounds. The rule in these cases is, the later the intervention for removal the better the result. This expectant attitude allows time not only for the development of the collateral circulation, but makes for a better and more aseptic operation. Intracapsular ligature is the simplest method for the surgeon and the best for the patient.

Expectant treatment is also advisable for nerve injuries. Nerves very often recover long after the initial injury; the paralytic symptoms then disappear. Not infrequently paralysis results from contusions or haematoma, which sometimes take weeks and even months to heal; massage and exercises are useful therapeutic adjuncts. Suturing the nerve should therefore be resorted to only where there is absolutely no sign of improvement. The two nerve-ends are frequently exposed, and resection of the injured part followed by circular suturing is often done.

About two-thirds of the face injuries show few or no bone lesions, so that prognosis for these is much more favorable than for other head wounds. Excellent cosmetic results have been reported. Strassburg, for example, has a special department for replacing upper and lower jaws, while the great advances in modern dentistry have wrought wonders. The orbital wounds are the most serious and the least hopeful of the injuries to this part of the organism.

Comparatively few cranial wounds reach the hospital, death being immediate on the battle-field in the vast majority of cases. This type of wounds may be classed as deep-wounds (*Stechschuss*), penetrating wounds, and tangential wounds. The latter are treated by the open method, laying open the wound-canal and bringing the two ends together. Brun has observed that, with the patient resting in a supine position, the deep-seated projectile has a tendency to wander toward

the back of the head, where it presents easy and favorable conditions for removal.

The outcome of chest wounds is the most favorable of all the wounds inflicted during this war. Even when the lungs have been involved the victims are in condition for transportation in ten to fourteen days.

Abdominal wounds represent a much more complicated matter. Prognosis is generally hopeless, the reported death-rate being 61 out of 63 cases for some surgeons, and 81 out of 88 cases for others. The few recoveries took place in non-operated cases, where good luck would have it that the intestines were empty when the injury was sustained. This high mortality is accounted for by the conditions of warfare and by the fact that the greater number of this type of wound is operable only within three hours, or at the utmost five hours, after infliction. In addition to this, the antiseptic conditions of the field hospitals and the lighting facilities are not all that could be desired, proper surgical assistance is frequently wanting, and transportation of the victim impossible. There is a whole series of abdominal wounds that run a favorable course for eight days, if given absolute rest and if all food, solid and liquid, be withheld.

Vertebral and spinal cord injuries form the saddest chapter in war surgery. The few cases that are brought back from the front usually die. Infection of the urinary tract can hardly be avoided in spite of the most rigid precautions, and in spite of the most careful nursing the patients suffer from progressive helplessness. In the majority of cases the thoracic vertebrae have been injured, the result being paresis of the lower limbs, absence of reflexes, and the anesthesia of spinal cord lesions. The missiles of small calibre produce a distinct separation of the medullary substance, the softening process and hemorrhage extending $1\frac{1}{2}$ to 2 centimetres above and below the wound-canal, making a cure absolutely impossible.

On the other hand, the effects of the surgery of the extremities are particularly good. The conservative principle of avoiding all unnecessary interference has brought about real triumphs of treatment. Fractures sustained in the field are treated by prompt and effective mobilization. The plaster bandage is probably the most useful appliance we have, but only when it is carefully and calmly applied and allowed to remain unchanged for a suitable length of

time. It is very evident that, in view of the conditions we have cited, the splint should be preferred in many cases, for in aseptic fractures improved extensions for the correction of vicious postures certainly present great advantages; these are then followed by circular plaster bandages. Both in the German and in the French army amputation is resorted to only when most urgently and unmistakably indicated. Conservative therapy is the rule not only here but in the treatment of all wounds. Lister's warning, "Hands off!" has become the watchword, and is responsible for the excellent results.

Finally, we would formulate the following rules for war surgery:
Good first aid.

Removal to a well-equipped hospital as soon as possible.

Immediate mobilization of all injuries to the extremities (splints and plaster bandages).

Conservative treatment of gunshot wounds.

Field hospitals should confine themselves more to bandaging; operations should be done only where the proper conditions prevail.

[The EDITOR's thanks are due our correspondent, Theophil F. Christen, M.B., D.Sc., of Munich, for the securing of this interesting article, and to Miss Annie M. Jastrow, of Philadelphia, for the excellent translation of the German original.]

THE TREATMENT OF FRACTURES OF THE LOWER END OF THE RADIUS BY REDUCTION AND CONTOUR SPLINTS

By JOHN B. ROBERTS, M.D.

Professor of Surgery in the Philadelphia Polyclinic; Chairman (1912-13) Fracture Committee of American Surgical Association, Philadelphia

THE important fractures of the lower end of the radius are four:

1. The classic or common fracture, usually more or less transverse, situated about one-third to three-quarters of an inch above the wrist-joint; with the carpal fragment displaced backwards, causing the silver-fork deformity.
2. A similar injury, but with the carpal fragment displaced forwards—the reversed classic fracture—causing the gardener's spade deformity.
3. A fracture situated “about one inch and a half above the carpal extremity of the radius” (using the words of Colles, of Dublin), with backward displacement—a true Colles's fracture.
4. A fracture having this same site, but with forward instead of backward displacement—a reversed Colles's fracture.

It is probable that Colles thought that the fracture about one-third to three-quarters of an inch above the joint was situated one and one-half inches above the carpal end of the radius; but his description corresponds with the third fracture in the above list.

Other forms of fracture of the base of the radius are less common than the four mentioned, and are usually either modifications or complications of them. It is not uncommon to have the styloid process of the ulna broken from the shaft of that bone when the force causing fracture of the radial base has been very great.

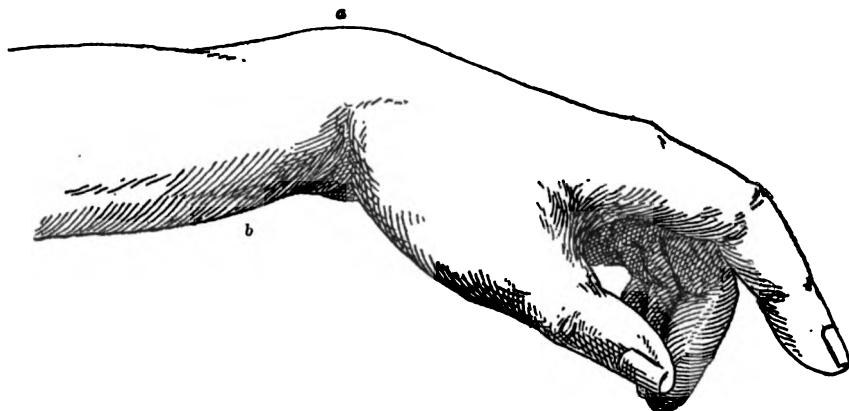
I have had the opportunity of showing in this clinic all four of these injuries, and to-day present patients and skiagrams, giving you a chance to study their pathology and treatment.

Mrs. B., aged fifty-seven years, slipped on the snow two days ago and injured the left wrist, which is declared by Dr. Mashburn, the resident physician, to be a fracture of the lower end of the radius, often im-

properly called Colles's fracture. The hand was deviated to the radial side; there was a marked elevation over the lower end of the radius at the base of the thumb, but higher up, namely, about a half inch above the wrist-joint, and the wrist was too painful to move. Examination showed marked crepitus and mobility, without discoloration or swelling, when the resident physician saw her.

When we look at a normal wrist and mark with a pencil the lower end of the styloid process on the radial side and the lower end of the styloid process on the ulnar side, and draw a line with a curved arch upward, we get the line of the joint, the top of the arch being from a quarter to a third of an inch above a line from styloid point to styloid point.

FIG. 1.

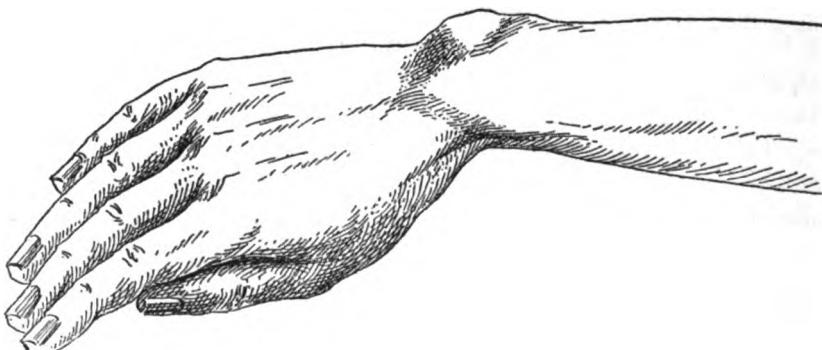


Deformity in the common, often called classic, fracture of carpal end of radius. Observe the elevation at *a*, due to the displacement backward of the carpal fragment, and the prominence at *b*, caused by the lower end of the shaft fragment.

If there is doubt about the diagnosis of the character of an injury near the wrist-joint, and you make pressure below the line just given as the line of the joint, you get no pain unless there is injury to the carpal bones. If you make pressure on the line of the joint and get pain, there is generally arthritis, which suggests a mere sprain. If you go one-half to three-quarters of an inch above the true line of the joint and get pain on pressure, it is suggestive of fracture. There is no joint at that spot, and if pressure upon the radius at that spot hurts it is probable that you have struck a fracture line. Often you will find at this situation, after a fall, an elevated ridge of bone caused by the displaced lower fragment of a fracture.

The hand of this patient is now swollen and painful, but is much less deformed than when seen two days ago. The resident physician evidently was successful in reducing to a great extent, if not entirely, the deformity due to the fracture. Upon running the finger down on the back of the radius, however, and getting within about a half inch of the lower end of the bone, you may now feel a little elevation. I think that means that there is still some displacement of the lower fragment in an ordinary or classic fracture of the base of the radius. After a whiff of ether the fragment, which was quite well reduced by the resident, is now jammed with my thumb down into place. It was not fully reduced by the intern, because he had not had the advantage of anesthesia and it needed a little extra push. Ether now having

FIG. 2.



Deformity in the unusual fracture with forward displacement of the carpal fragment. Observe the great dorsal prominence of the lower end of the ulna. In this case there was also considerable displacement of the carpal fragment towards the radial side of the arm.

been given, I gave the fragment a little extra shoving-down into place. I make a splint out of plaster-of-Paris and gauze to simulate the appearance of the Levis moulded copper splint, often used on the palmar surface from fractures of the lower end of the radius.

One may either mould the splint from layers of ordinary mosquito netting smeared with plaster-of-Paris mixture, or take a gauze bandage which has been filled with dry plaster, wet it, and, putting it on the table in successive folds, going backward and forward, get the layers thick enough to make a moderately thick splint. This has now been moulded to the palmar surface of the radius and ulna so as to construct for the forearm a palmar splint. This corresponds with the arch of the lower third of the radius, which has been reconstructed

by pushing down into place the articular fragment, which had been displaced backward by the force of the blow sustained when the patient fell upon the pavement.

These fractures of the lower end of the radius are quite typical and are nearly always transverse. The lower fragment is sometimes split and sometimes—quite often, indeed—there is impaction. I have laid these successive layers of plaster and gauze on the palmar surface from just below the elbow to the distal end of the first phalanx of the fingers. By allowing the hand to drop in flexion at the wrist the tendons of the extensor group of muscles are strapped across the lower end of the reconstructed bone, and thus aid in holding the fragment in proper position.

As a rule, there is no necessity for a dorsal splint, for, with the hand prone after the palmar arch of the radius has been reconstructed by the reduction, the fractured surfaces remain in contact, unless displaced by unexpected forces. The palmar trough of plaster and gauze will be sufficient protection. This method of making a splint is even better than using the copper splint, because the gypsum contour trough exactly fits the arm according to the size and fatness of the individual's limbs; whereas, a metal splint has to be bent into some sort of shape and never fits exactly. It used to be said by an old Scotch professor that a splint that is moulded is like a pair of trousers made to order, while a wooden splint is like a pair bought ready-made: it never really fits the broken limb.

If the surgeon prefers, the gypsum gauze splint may be moulded to the dorsum of the forearm, wrist and hand, instead of the palmar. When I make such a splint, I usually have the wrist moderately flexed and may hold the hand a little adducted towards the radial side.

The next patient is William Kelly, a boy fourteen years of age, hurt about eleven days ago, and who has a similar injury, but probably an epiphyseal separation in the same region. The boy fell while on his skates and injured the left radius at the base, just as the woman whose fracture I reduced a moment ago sustained a fracture. On last Monday I applied a circular plaster-of-Paris bandage so as to make a gypsum encasement. The resident physician, Dr. Park, had previously reduced the displacement. The boy is very comfortable, but I will now split the encasement open on the top with a knife after putting a little peroxide of hydrogen along this line made with my

FIG. 3 A.



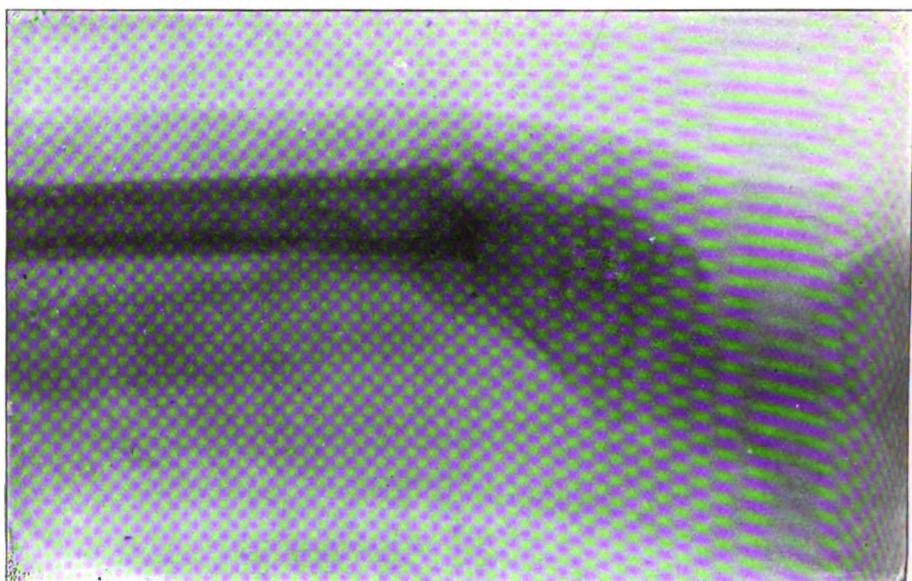
Skiagram of Mary C——, Polyclinic. Fracture of radius "about one inch and a half above the carpal extremity of the radius," with backward displacement—a true Colles's fracture. There is also seen the deformity of the base of the radius due to an untreated (?) fracture six months previously, and the accompanying fracture of the ulnar styloid.

FIG. 3 B.



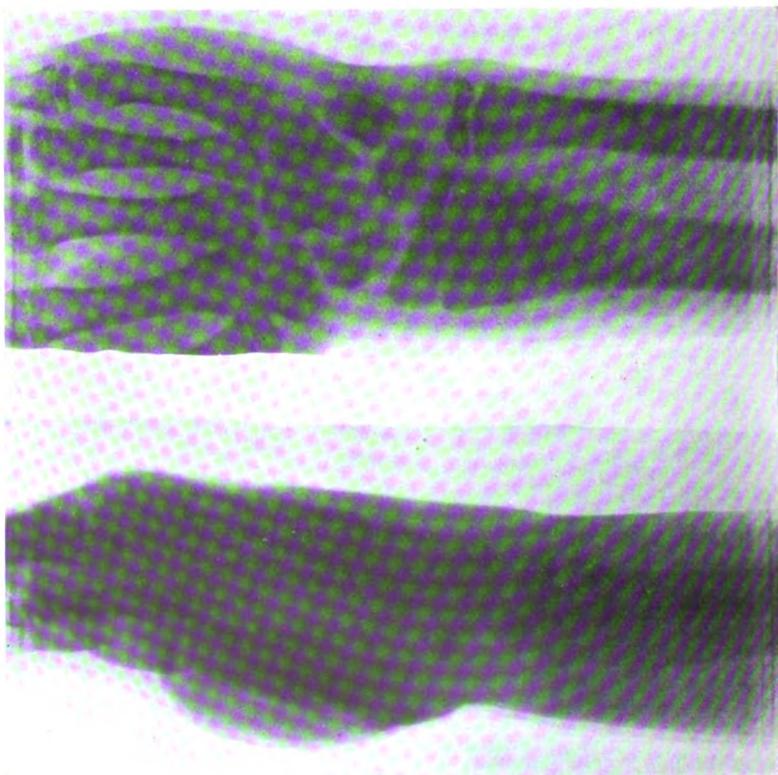
Skiagram showing lateral view of the fracture of the radius "about one inch and a half above the carpal extremity of the radius" of Mary C———, a true Colles's fracture. The deformity of base of radius due to the former untreated (?) fracture is also evident.

FIG. 4 A.



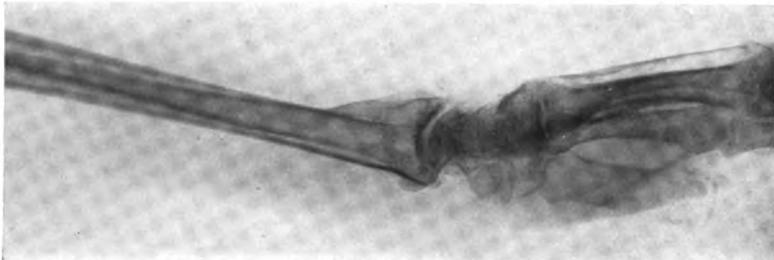
Fracture of lower end of radius with forward displacement one and one-half inches above wrist-joint.

FIG. 4 B.



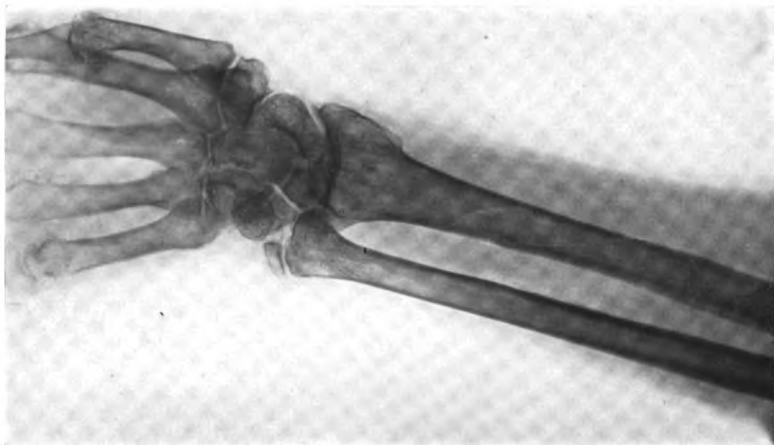
Epiphyseal separation with backward displacement. (Anteroposterior and lateral view.)

FIG. 5 A.



Old unreduced classic fracture of carpal end of radius, showing characteristic backward displacement of carpal fragment.

FIG. 5 B.



Old unreduced classic fracture of carpal end of radius, showing characteristic backward displacement and the not unusual fracture of the ulnar styloid process.

pencil. The peroxide softens the plaster so that it is easily cut with the knife.

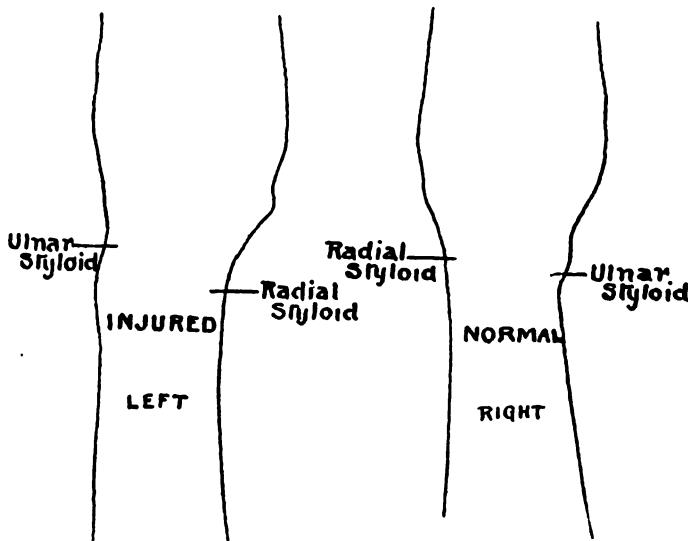
The splint is now open, is sprung apart, and the arm is carefully lifted out. The fracture shows no deformity. I reapply the encasement for safety's sake, although the fracture does not seem to have been marked and there is no swelling. I have a feeling that this was an epiphyseal separation, for the lower epiphyseal cartilage of the radius does not ossify until the twentieth year. I did not see the boy myself at first. We will steady the joint, he being a boy prone to active movements, with the plaster-of-Paris encasement for a couple of weeks longer. In this instance, as in all others, the arm is bathed in alcohol or warm water and soap and given very light massage and movements before the splint is reapplied. Such manipulations are, as a rule, of value in all fractures of the extremities.

The next patient is Mr. S., a policeman, hurt on the 7th of March, which is two days over four weeks ago. When I saw him he had a fracture of the lower end of the right radius which had not been reduced. He had intense pain, apparently from pressure upon the median and radial nerves by the lower end of the upper fragment, and was in a very nervous condition. The lower part of the forearm was swollen, and the patient was exceedingly upset with pain; he had not slept for two nights. We etherized him and reduced the fracture by vigorous hyperextension of the wrist, followed by strong flexion with pressure on the dorsal aspect of the lower fragment. A Levis metal splint to fit the palmar aspect of the reconstructed radius was then applied for maintenance of the reduction. This was removed daily and the arm bathed and given moderate massage. At the end of about three weeks the splint was taken off and a wristlet of adhesive plaster was applied to steady the point of fracture, as his occupation, that of a police officer, would possibly require him to use his hand rather vigorously. He is now nearly ready to be discharged from treatment, though there are still some thickening of tissues at the lower end of the radius and slight restriction of mobility at the wrist.

Mrs. A., aged thirty-eight years, fell downstairs when fainting, and broke the left radius in the same spot, practically, as the other three patients. She also had the fracture reduced under ether at this clinic about two days after injury. I put a narrow straight splint on the back of the arm, extending from about the middle of the forearm to

the wrist-joint and a little below. It was padded evenly with cotton; I kept the hand flexed at the wrist and padded with cotton between the overhanging end of the splint and the metacarpal bones. Later I applied a circular plaster-of-Paris encasement, which she wore for a week and then had the metal one applied. She has worn an adhesive plaster wristlet for about ten days. She still has a little loss of rotation; she can bend the thumb in fully and make a fist. There is some slight radial deviation, and the swelling is not entirely gone. As she was injured on the 23d of February, and it is now the 5th of April,

FIG. 6.



Outline diagram, made with palmar surface of hands on table, showing how the displacement backward and upward in classic fracture of the base of the radius causes the radial styloid to be nearer the elbow than normally. This displacement alters the direction of the plane of the carpal articulating surface of the radius.

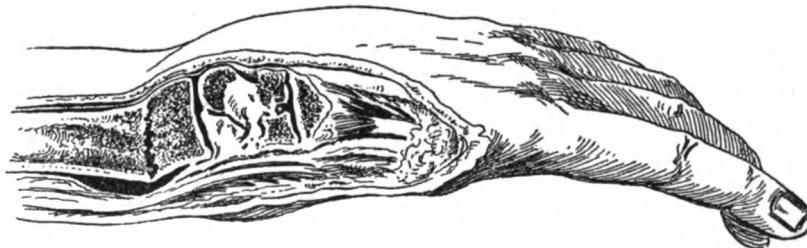
she is discharged from active treatment, except to have massage occasionally to gain rotation of radius and ulna. She has almost perfect use of the wrist-joint, though there is a little stiffness, which will soon disappear.

Mary C., aged about fifty-six years, furnishes a good illustration of the description by Colles, of Dublin, many years ago, of fracture of the lower end of the radius. She has, as shown by the X-ray print, a fracture of the left radius about one and a half inches above the articulation of that bone with the carpus. She fell a few days ago in

the yard of her house, and tells me that about six months previously she broke the same arm at the wrist, and was treated by a doctor for it.

When I first saw her it was evident that the previous fracture was the classic injury of the base of the radius, which had not been fully, if at all, reduced. The present fracture is about one and a half inches above the joint, or about one inch above the previous break. The tendency of the upper end of the lower fragment is to be displaced toward the ulna and rotated into pronation. What has interested me greatly is the spasm of the square pronator muscle felt when I endeavor to supinate the hand. The patient holds the hand nearly prone, but just as soon as I endeavor to supinate it I feel the jerk or pull of the pronator quadratus resisting my effort. This may be emphasized at this time, because, when I first examined her, I gave pain in my endeavor to reduce the fragments and modify the angularity at the seat of fracture.

FIG. 7.



Anger's section of a specimen of classic fracture of carpal extremity of the radial base. In this instance there was no impaction of the upper into the lower fragment, but the backward displacement is well shown.

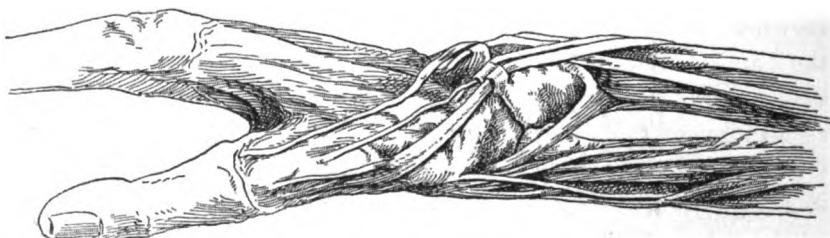
The woman has had pain from efforts at reduction by the resident physician and by me, and, besides, is addicted to the use of alcohol. These factors are sufficient to cause undue excitability of the muscles. To reduce this fracture, therefore, I was compelled to give ether, and succeeded in correcting the deformity, and applied for fixation a gypsum encasement.

Casual inspection of the other wrist easily revealed the presence of an old unreduced classic fracture of the base of the radius. The woman declared that she had never received a severe injury there and had never had a doctor for it. The radiograph I show proves, however, that my contention is correct. It reveals the deformity of an old fracture with unreduced backward displacement of the upper fragment.

The radiographs of the two arms show the three fractures (two old and one recent), and the full degree of supination in both limbs shows in these photographs how restricted that of the left arm is. It is not unusual to find some rigidity causing restriction of rotation after untreated or imperfectly-reduced classic fractures of the radial base. I do not remember ever to have seen the quadratus pronator act spasmodically as here. The muscle can not have much reason for spasm, except in the fracture of the *shaft* about one and a half inches above the joint, which involves the region of its insertion. Hence we do not find it in the classic injury.

(This patient was treated for two or three weeks, and when last seen was nearly well. She then disappeared from the clinic, probably as a result of alcoholic indifference to her physical condition.)

FIG. 8.



Dissection of specimen in museum of New York Hospital of a united fracture (without reduction) of the radial base with anterior displacement—the reversed classic fracture.

All four cases will have practically perfect functional use and almost absolute anatomical reconstruction of the bone. There may be in all but the boy a very slight radial adduction of the hand.

I have shown you, therefore, one fracture completely reduced under ether, for which we made a plaster-of-Paris palmar splint of superimposed layers of plaster bandage; this officer with a metal splint after a similar ether reduction, who is now discharged from treatment with the arm cured; the boy with a circular encasement made with a plaster-of-Paris or gypsum bandage; and the woman with a wristlet of adhesive plaster, after discarding the more rigid splint dressing.

This injury of the lower end of the radius is one of the most common fractures with which surgeons have to deal. It has long been looked upon by many as an exceedingly difficult fracture to

treat satisfactorily. The truth is that if it is managed with efficiency born of a thorough understanding of the pathology of the lesion the result is nearly always good, the convalescence comfortable, and the restoration of the shape of the bone almost perfect. It is, in my opinion, the most satisfactory of all the major fractures to handle. It is often erroneously called Colles's fracture. Colles, of Dublin, who made a study of fractures at the lower end of the radius, thought that the break was an inch and a half, more or less, from the joint surface. Subsequent investigation and occasional autopsies, particularly by American surgeons, showed that the injury was usually about one-half or three-quarters of an inch above the carpal articulation of the radius and usually more or less transverse. The lower fragment is generally displaced backwards; there is often impaction of the upper fragment into the lower, and sometimes the lower fragment is split into several pieces. This last condition exists particularly in the aged, in whom the bone is brittle from atrophy. Falls upon the palm of the hand in these subjects are apt, therefore, to cause a good deal of comminution of the lower fragment and, as a result, less perfect restoration of the anatomical contour of the lower end of the bone. Other than this, however, the cure is almost as good in the old as it is in middle-aged or young patients.

In the classic fracture which we have been studying in the cases shown to-day the displacement of the lower fragment is backward, causing an elevation on the dorsal surface of the forearm just above the wrist and a palmar projection of the lower end of the upper fragment about an inch higher than the radiocarpal articulation on the palmar surface. This gives rise to the so-called silver-fork deformity. Occasionally the vulnerability force is applied to the back of the wrist and the hand is flexed at the wrist-joint instead of being dorsally extended as in the usual form. This gives rise to what has sometimes been called the reversed Colles's fracture, sometimes called Smith's fracture. It is better termed "fracture of the lower end of the radius with forward displacement." It gives quite a different outline from the classic fracture, because the arch of the lower end of the radius on the palmar surface is greatly increased instead of being more or less obliterated, as occurs in the case of backward displacement of the lower fragment. The outline of the deformity, as will be seen by these specimens, X-ray prints, and diagrams, is somewhat like the gar-

dener's spade. These lines drawn on the blackboard will show you how different it is from the silver-fork deformity. There have been a number of cases radiographed here at the Polyclinic Hospital of forward displacement, some of which are shown in the X-ray plates exhibited.

The diagnosis of fracture of the radius is made partly by the deformity in the classic injury, it being, as already stated, of the silver-fork variety; in the rather unusual anterior displacement it gives the deformity called gardener's spade deformity.

These injuries are differentiated from sprain of the wrist-joint by the point of painful pressure being about half an inch above the joint instead of along the line connecting the two styloid processes. I have shown you in one of these patients that a line drawn from the radial styloid to the ulnar styloid over the wrist-joint must be an arch with the convexity upwards, the top of the arch being about a quarter of an inch above the line joining the two styloid processes. In the normal forearm the radial styloid is farther away from the elbow than the ulnar. When fracture takes place through the base of the radius the styloid process is carried nearer the elbow, making the line joining the two processes almost at a right angle to the axis of the limb, or perhaps with the radial end a little nearer the elbow.

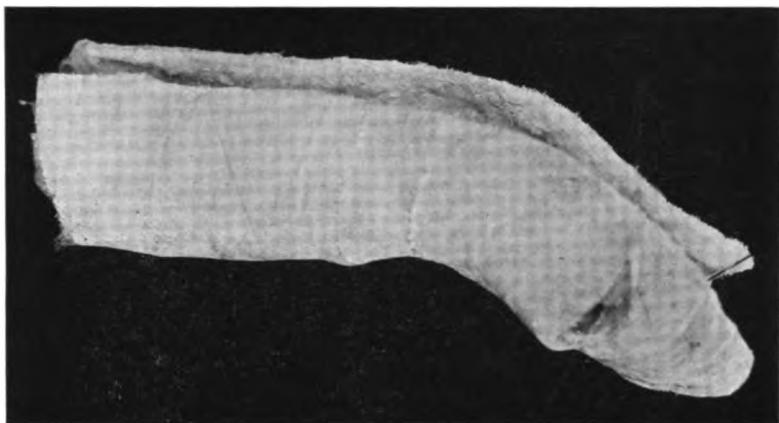
In persons less than twenty years of age epiphyseal separation is to be expected rather than fracture. I have mentioned that as being the case probably in this young boy.

The frequency of impaction renders crepitus and abnormal mobility often absent when the primary examination is made of these injuries. It is because of this impaction and the unwillingness of many surgeons, in comparatively recent times, to break up the impaction that have given rise to the many cases of deformity after the injury, caused protracted convalescence with pain and stiffness of fingers and wrist, and led to the opinion that the fracture is a difficult one to cure with satisfactory results.

The essential point to be remembered in all these breaks through the base of the radius, whether the displacement of the lower fragment be backward or forward, is early and complete replacement of the lower fragment so as to reconstruct the palmar arch seen in the lower fifth of the normal radius.

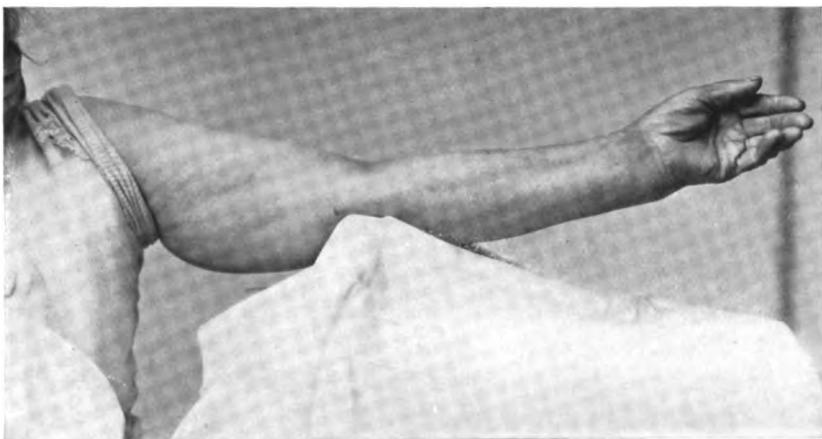
In two of these cases the reduction was attempted, and quite well

FIG. 9.



Gypsum encasement used for a fracture of the lower end of the radius, showing the cut down the dorsal surface made to permit removal from the arm, and the openings through which the patient's thumb and fingers protruded during treatment.

FIG. 10.



Restriction of supination from spasm of pronator quadratus in a fracture of radius an inch and a half above wrist-joint, left arm. Photograph taken prior to etherization and reduction. (Mary C---.) Compare greater amount of supination possible in right arm, Fig. 11, same patient.

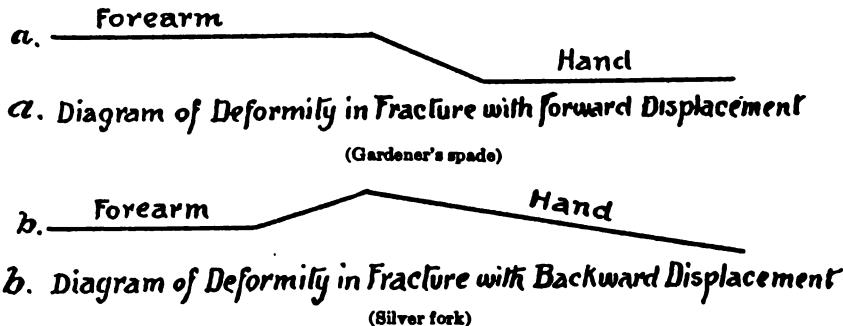
FIG. 11.



Normal amount of full supination, right arm of Mary C—. Compare with Fig. 10.

made, by the young resident physicians who saw the patients. Every year I see in this clinic and in other places instances of the ordinary classic fracture with backward displacement, which have not been reduced by the practitioners who have first seen them. The essential, therefore, is thorough reduction, which will usually be best accomplished with the patient etherized. This is a humane proceeding also, because the process of reduction is very painful. The primary anaesthesia of ether or short anaesthesia with nitrous oxide is all that is necessary, if the surgeon is quick in forcing the lower fragment into position, and only satisfied when he can prove by examination of the lower end of the bone that there is no longer an elevation upon the dorsal surface in the classic fracture or an increase of the normal

FIG. 12.



The lines show the difference in the planes of the dorsum of forearm, wrist, and hand in the classic fracture of the radial base (silver-fork deformity) (b), and in the reversed, or forward displacement of the carpal fragment (gardener's spade deformity), (a).

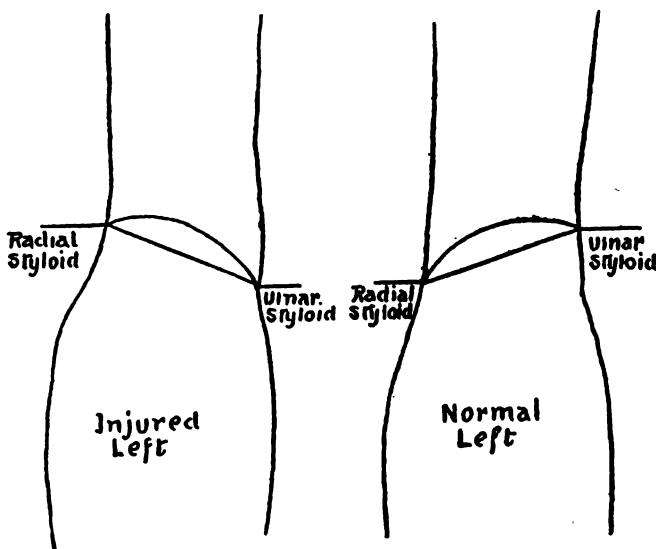
palmar arch in the reversed fracture. By reversed fracture I mean that in which the lower fragment comes forward instead of backward as a result of the injury.

Many of these cases have the styloid process of the ulna fractured at its base as a coincidence with the breaking of the lower end of the radius. This injury, however, is of minor importance and usually needs no special treatment, if replacement of the radial fragments is complete. Old and rheumatic patients may perhaps exhibit some tendency to rigidity of the joints after the injury, but the stiff fingers and stiff wrist are usually an indication of imperfect reduction of the fragments. These, by their projections, interfere with the action of the extensor and flexor tendons and give rise to adhesive inflammation. This is particularly the case if the operator, after putting

on the original fracture dressing, allows the patient to go for days without early massage and mild passive movements of the joints. I always allow these patients to move their fingers from the very first day and to have a little voluntary motion of the wrist very early. No apparatus should be applied that restricts at any period of the treatment full and free motion of the fingers.

Cases without comminution of the lower fragment, which are perfectly reduced, occurring in those who need not use the hand for active work, often need no further restraining splint than a wristlet of

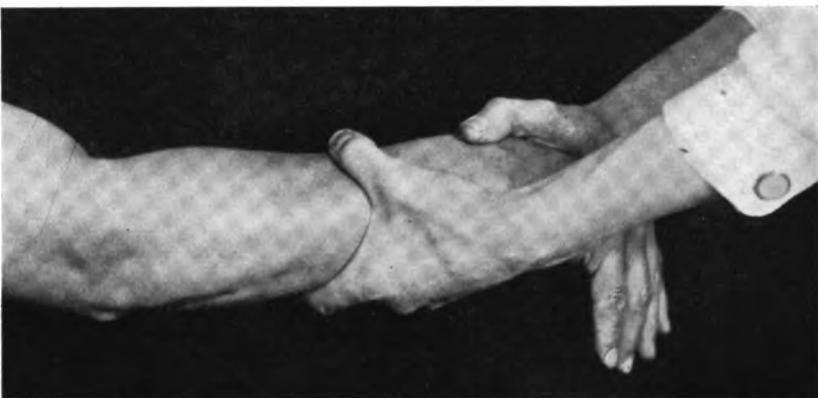
FIG. 13.



Outlines of hand, placed with palm on table, showing change in relation of styloid processes caused by classic fracture of lower end of radius. Curved line indicates joint.

adhesive plaster to remind them not to throw strain upon the broken bone. This dressing is not, however, to be thought of in boys, liable to misuse the injured arm, careless people, or in the old, in whom there has been a good deal of comminution. The easiest method to get complete reduction, I think, is to seize the wrist of the patient with one hand, grasp his hand in your palm and place your thumb upon the dorsal aspect of the backwardly-displaced lower fragment. A little extension is then made; next, obtaining flexion of his wrist, with strong pressure of your thumb on the top of the lower fragment you

FIG. 14.



Method of reducing the lower fragment when displaced backwards. The surgeon's thumb on the lower fragment forces it down into normal position at the moment he flexes the patient's wrist.

FIG. 15.



Method of reducing the carpal fragment, displaced backwards, by first breaking up the impaction by means of hyperextension across the operator's knee. The loosened fragment is then forced into place, by the right thumb during flexion of the wrist, to reconstruct the normal arch on the palmar aspect of the lower fifth of the radius. The same manipulations are used in correcting old unreduced fractures to rupture the uniting callus and set the fragments.

are enabled to drive it down with a crushing crepitus into its proper position. For reversed displacement due to falls upon the back of the hand the pressure must, of course, be made in the opposite direction. If there is strong impaction it may be necessary, while the patient is under ether, to at first make strong hyperextension of the wrist-joint in the classic fracture to unlock the impaction and then reduce the displacement. Abnormal mobility and crepitus are easily developed after impaction has been broken up in this manner.

I have been able by this manipulation to reduce the displaced bone several weeks after the injury. At the end of six or eight weeks, however, it is usually necessary to refracture the union, which has taken place with deformity, before the arch of the radius can be reconstructed. I think three months is about as long as I have succeeded easily in replacing the bone, but I have on one or two occasions broken up the impaction in neglected cases after about five months. To do this it is well to take the arm and break the bond of union across your knee by putting the knee against the back of the man's wrist and exerting about all the force you can apply. This breaks up the callus holding the fragments together, and you can then reduce and get a fair result. The deformity is not overcome as thoroughly, however, as if the replacement is done, as it should be, when the limb is first seen after the accident which has caused the fracture.

After reduction, whether done early or late, any form of dressing is allowable, if it immobilizes the fracture but does not tend to obliterate the normal curve on the palmar face of the lower fifth of the radius and allows the patient to move his fingers freely from the moment the splint is put in place.

It is sometimes taught that splints deflecting the hand to the ulnar side exert some traction on the radial side of the wrist and will therefore prevent the slight shortening, which nearly always occurs on the radial side, and be of benefit in bringing the styloid fragment of the ulna, if it be broken from the shaft, into apposition to the shaft. This is scarcely ever necessary, though it may possibly be of value in cases where there has been a great deal of laceration of the lateral ulno-carpal ligaments.

I usually place the hand in the prone or semi-prone position and use a single splint, extending from the upper third of the forearm to the middle of the metacarpus, placed upon the palmar surface,

with the wrist flexed so that the hand drops toward the palmar surface and the extensor tendons are tightened across the back of the wrist. They, to a limited extent, hold, perhaps, the lower fragment in position. It is essential that the lower fifth of the palmar splint be curved to correspond with the arched curve of the palmar surface of the lower fifth of the radius. Unless this arch has been reconstructed the surgeon has not properly reduced the fracture. A moulded copper splint, often called Lewis's radial splint, can be bought for this purpose. It is swedged to fit the palmar aspect of the forearm and hand in the flexed position. It, however, is expensive and is not as satisfactory as

FIG. 16.

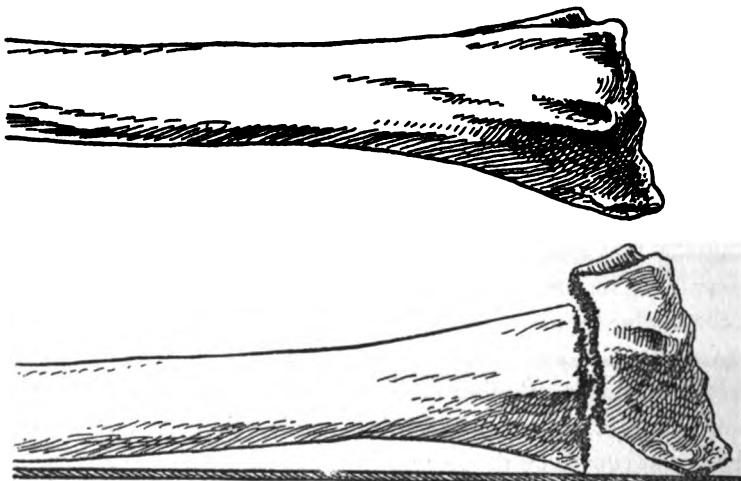


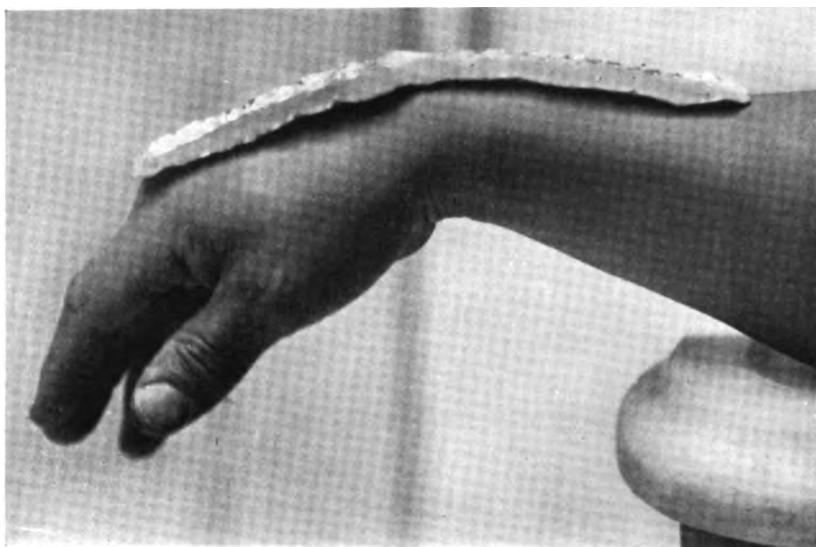
Diagram of danger of using flat splint or splint with soft pad on palmar surface of radius.

a plastic splint moulded out of gauze stiffened with plaster of Paris or some other hardening material. No dorsal splint is needed, as I have shown you in two of the cases before you.

A *dorsal* contour plastic splint is as good, or perhaps better. It is made by moulding six or eight layers of plaster-of-Paris bandage to the flexed wrist and forearm after thorough reduction of the fracture.

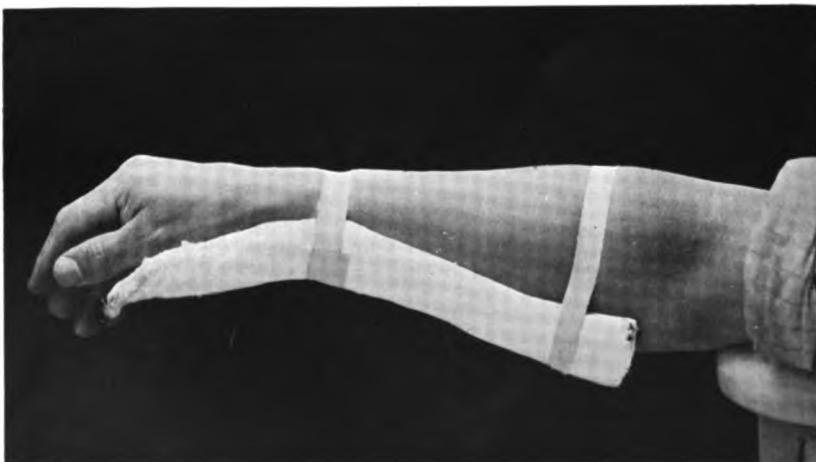
This dressing is better in the early stages of fracture than enclosing the arm with a plaster-of-Paris or gypsum encasement, because there is the possibility of a great deal of swelling within the first thirty-six or forty-eight hours. A palmar or dorsal splint properly moulded and

FIG. 17.



Aluminum contour splint on dorsum, after the reduction of fracture of carpal end of radius, to hold wrist in semiflexion and maintain coaptation of fragments. The aluminum sheet, about one and one-half inches wide, ten inches long, and one-tenth inch thick, is bent as desired and the edge turned up. It is bandaged to the dorsum of the forearm and hand. A gypsum contour splint of gauze and plaster may be moulded to the dorsum instead.

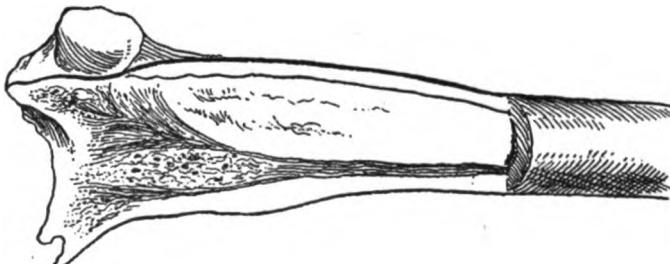
FIG. 18.



A gypsum contour splint to fit patient may be moulded from strips of gauze or mosquito netting, soaked in plaster of Paris and water, and applied to the dorsum of forearm and hand after reduction of fragments.

held in place by a moderately but firmly applied bandage may easily have the pressure relaxed if the swelling becomes marked. This cannot be done with a plaster encasement, even if split, unless the surgeon or some competent person be present. Pressure from the other dressing can be relieved by the patient himself cutting the bandage with scissors. If no plaster of Paris is obtainable when the patient is first seen, satisfactory results may be obtained by applying a straight splint of wood padded with cotton on the dorsal aspect of the hand from the upper third of the forearm to the knuckles at the metacarpal phalangeal joint. The back of the wrist, if you will look at your own forearms, is practically level and has not the arch which you see upon the palmar surface of the lower end of the radius. I usually, therefore, when I use a straight splint, let it come either to the knuckles, or, if

FIG. 19.



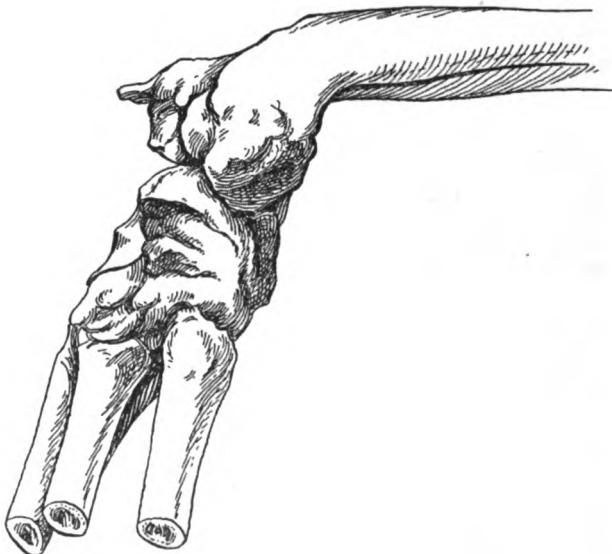
Mütter Museum specimen of old unreduced, reversed, classic fracture of radial base, showing subluxated head of ulna projecting dorsal.

I desire to keep the wrist flexed, put some padding of cotton or gauze between the end of the splint which projects beyond the wrist and the metacarpal bones. A piece of cigar-box lid, an inch and a half wide and an eighth inch long, makes a very good dorsal splint. If a dorsal splint is used no palmar splint is necessary. A strip of aluminum or zinc may be used on the back instead of the wood. Its lower end may then be bent to hold the metacarpus flexed at the wrist and thus steady the fragments by the strapping action of the extensor tendons. A little more safety, however, and rigidity can be obtained, I think, by the palmar splint moulded from gauze smeared with gypsum mixture. It is well to recollect that plaster of Paris, so-called, is nothing but dehydrated gypsum, which solidifies when mixed with water, and therefore makes a good splint if the creamy material is

rubbed in gauze or anything like mosquito netting or a very open-meshed cotton cloth. The great advantage of gypsum is its rapidity of solidifying, though, of course, sodium silicate, starch, or any similar mixture will answer the purpose.

The splint should be removed every day for the first week, the arm washed thoroughly with alcohol or soap and water, and light massage given to the muscles and manipulative motions to the joints. Later it may be sufficient to expose the arm and go through these manœuvres every other day only. No one who has not watched the

FIG. 20.



Edinburgh specimen of united, but unreduced, fracture of radius, with anterior displacement of carpal piece (reversed classic fracture).

progress of cases subjected to early, slight, and careful massage and manipulation of joints is able to realize, in my opinion, the benefit accruing from this improvement in the management of fractures.

Much of the pain, deformity, and slow convalescence of fractures, particularly those under consideration, is due to neglect of this reasonable method of improving the soft parts. For many years the surgeon's attention has been fixed entirely upon reconstructing the contour of the bone in fractures and neglecting the simultaneous injury to the soft parts. As a result, thecitis, myositis, arthritis, and other

FIG. 21.



X-ray of forward displacement. (Dr. Roberts's patient, Rosetta C---)

pathologic conditions have been entirely neglected. It had seemingly become the idea of surgeons that they were mere carpenters to restore the bones to their normal anatomical relations, and that the tissues covering the bones needed no treatment; although they were familiar with the fact that sprains and other muscular and tendinous injuries were exceedingly slow in recovering their integrity after injury.

An incidental advantage of taking off the splints and using massage and motions for improving the condition of fractures is that it gives the surgeon an opportunity of seeing any slight deviation from bony contour which may need correction at his hands. Such clinical improvements in anatomical contour of the skeleton can readily be made during the first eight or ten days of almost all fractures.

In fractures of the lower end of the radius splints may usually be discarded entirely at the end of about twelve days in ordinary cases, at the end of fourteen to eighteen days in patients a little more reckless in their conduct after fracture, and at the end of three weeks in practically all patients. For a time, however, it is well to wear a wristlet of adhesive plaster as a reminder of the weak bone just united after the injury. This may be substituted for a plain bandage at the end of four weeks, and normal use of the hand be allowed at the end of five or six weeks.

In cases where there has been very little periosteal separation and not much displacement the patient can remove his arm from the sling so as to use the coat sleeve on the arm affected after three or four days. Many people can even use their hands for writing and minor muscular movements within ten days or two weeks.

TRAUMATIC INJURIES OF THE NOSE AND THEIR TREATMENT

BY WILLIAM WESLEY CARTER, A.M., M.D.

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In speaking of traumatic injuries of the nose, it is implied that some part of the bony or cartilaginous framework of the organ has been fractured. These injuries are usually due to direct violence, the most frequent cause being a blow from the fist, a fall upon the face, a kick from a horse, or violent contact with any object. Epistaxis is always present, and the fracture is practically always compound into the nose, the mucous membrane being lacerated. The nasal bones alone may be affected, but, if the injury is severe, the nasal processes of the superior maxillæ, the vertical plate of the ethmoid, the cartilaginous septum, including the columnar cartilages, may all be fractured and dislocated. Such an injury usually results, unless the case is properly treated, in a characteristic deformity popularly known as *boxer's nose*. Even in severe injuries the vomer is seldom injured; its position affords it almost complete protection from external traumatism. Fortunately, also, a blow is seldom transmitted to the cribriform plate with sufficient violence to fracture it. The anterior ethmoid cells may be opened up and the lachrymal canal may be injured. I have seen a case in which, in addition to fracture of the nose, the anterior ethmoid cells, the frontal sinus, and the antrum were all opened up and involved in a suppurative process; the injury in this case was due to the hook of a cow.

Fracture of the nasal bones usually occurs, not transversely, but longitudinally in a direction with the grain of the bone. In most injuries the nasal bones are separated from each other, from the nasofrontal processes of the superior maxillæ and from the nasofrontal spine. There is a marked tendency for the nasal bones to separate widely and to override the nasal processes of the superior maxillæ, thus

producing a broad, flat nasal bridge. The displacement of the bones in this manner may be considered a dislocation. The junction of the nasal bones and their articulations with the nasal processes of the superior maxillæ and the frontal are very close, and occasionally in adult life bony union has occurred in these sutures. This is said to happen more frequently in the negro than in the Anglo-Saxon race. Fractures, as a rule, are apt to follow the sutural lines. If the nasal bones are broken transversely, the fracture occurs usually near the middle of the bones, at a point corresponding to the tip of the frontal spine, which supports and protects from fracture the upper ends of these bones. In severe injuries the nasal processes of the superior maxillæ are fractured. The lachrymal canal, however, is seldom injured, for the grain of the bone runs upwards and forwards; the splintering of the bone, therefore, is away from the canal and not into it.

In severe crushing injuries to the nose the septum is nearly always crumpled up, and the broken edges protrude through the mucous membrane into the nasal cavities. It occasionally happens, however, that the resiliency of the septum will enable it to withstand the crushing effect of the blow and its upper edge will protrude vertically above the general level of the flattened nose. I have seen this effect on several occasions.

Unless the case is seen immediately after the injury the tumefaction is so great that it is absolutely impossible to tell the extent of the injury or to determine the position of the fractured segments of the nasal arch. Emphysema, caused by the patient blowing his nose, often increases the swelling and adds to the confusion. On palpation, what is thought to be bone crepitus may be blood crepitus or emphysematous crackling. It must be admitted that, under such circumstances, no one can say with certainty the exact extent of the injury. We must assume, however, in all such cases not only that we have a fracture, but that the fragments are displaced.

Formerly the treatment of injuries to the nose has been conducted in a very uncertain, unsatisfactory, and unscientific manner. Only passing attention is given to the matter in the text-books: one is merely advised to manipulate the fragments into position and to pack the nose with gauze or introduce a perforated splint. A very

popular method of treatment was to stretch a piece of adhesive plaster across the bridge of the nose. The defects in such treatment are apparent at once. In the first instance, the fragments will not remain in position even if they could be placed in position by manipulation; furthermore, there is no support for the nasal bridge. In the second instance, the nasal bridge will be flattened down by the adhesive plaster to a level with the face, and the nasal cavities will be obstructed by the crushed-in arch. Treatment by these methods invariably resulted in nasal obstruction and nasal deformity.

In the early treatment of traumatic injuries of the nose it is very essential to secure a thoroughly aseptic wound, for if suppuration occurs, and especially if erysipelas develops, important bony and cartilaginous tissue will surely be lost, and a deformity will result that can be corrected only by the transplantation of bone. Therefore we should take every precaution to secure aseptic healing and not rely too much upon the wonderful natural resistance to infection which the nasal tissues usually show, nor should we count too much upon the natural immunity which these tissues develop towards the bacteria which frequent the nasal cavities.

If the case is seen immediately after the accident, the bridge splint, which will be described later, may be applied at once, after the field has been thoroughly cleansed and the fragments adjusted by means of the Adams forceps. If, however, the swelling has already occurred, the best that we can do is to clean up the area thoroughly, pack the nasal cavity with vaseline gauze, place a very light gauze dressing over the bridge of the nose, and wait until the swelling subsides. The bridge splint can then be applied.

If the injury is an old one and is the result of a crushing blow, the nose usually appears irregularly flattened, and the nasal cavities are more or less obstructed by the broken cartilage and bone and by the cicatricial contraction. These cases are difficult and present the double problem of correcting the deformity and relieving the obstruction. Where the septum is crumpled up and very thick it is better to do a submucous operation, and then, when healing is complete, do the bridge splint operation. In these cases it is necessary first to mobilize the entire framework of the nose. This may be done by means of the Adams forceps, my chisel-forceps for cutting through the nasal bones near their attachment to the nasofrontal spine, and my intranasal

chisel for liberating the nasal processes of the superior maxilla. The mobilization must be most thorough, and it may be necessary to overcome the cicatricial contractions by making incisions through the latter.

DESCRIPTION OF THE BRIDGE SPLINT

The bridge splint, an instrument introduced by me several years ago, is adapted to the treatment of most injuries of the nose. It has revolutionized the methods formerly employed in such cases. Its action tends to duplicate the forces employed by Nature in the development of the flattened nose of the infant into the more shapely organ of the adult. Therefore in cases where the nose has been crushed in it restores the former symmetry and function of the organ by pulling back into their proper position the broken, displaced fragments of the nasal arch and holding them until union occurs.

The instrument consists of a steel arch formed by two fenestrated curved wings hinged together in the middle. The edges of the wings are padded with rubber. The distance to which these wings can be separated is regulated by a thumb-screw. The intranasal splints, which are made of sheet gutta-percha, are moulded at the time of the operation to conform to the roof of the nasal cavities and are threaded upon silk sutures. These sutures, in turn, are threaded into medium-curved needles. In applying the instrument the sutures are passed from within the nose through the cartilaginous dorsum, near the ends of the nasal bones. The splints are then pulled into the nose and adjusted to the roof of the nasal cavities. The bridge is then placed in position, the sutures are passed through the fenestrae corresponding to their point of exit from the dorsum of the nose. The bridge of the nose is now raised by means of the sutures, which are then tied together over the hinge of the instrument. The proper amount of pressure to the base of the nasal triangle is made by means of the thumb-screw. The action of the instrument is to raise the bridge of the nose and narrow the base of the nasal triangle. It will be recognized at once that when this instrument is applied the opposing forces exerted by it counterbalance each other and make it self-retaining. The instrument should be left on for ten days, or longer if necessary. Every day the wings should be loosened up and the skin where they rest should be bathed with alcohol to prevent necrosis. The area

around the sutures should be kept clean with peroxide of hydrogen. Vaseline should be introduced into the nasal cavities each day.

The passing of sutures through the tissues of the nose does not complicate the case, for we already have a compound fracture. Capillary drainage is perfectly free along the silk sutures. I have never yet had any serious results from this operation, and in suitable cases where the method has been used the results have been uniformly satisfactory. Where the instrument does not succeed in properly elevating the nasal bridge, the only other alternative is to transplant bone, the discussion of which does not come within the scope of this communication. Nor does it come within the range of our subject to detail the methods by which the nose is restored after a part or all of the organ has been destroyed by accident or disease. Suffice it to say that various plastic procedures and the transplantation of tissue from different parts of the body have enabled us to obtain remarkable results in relieving cases which have hitherto been considered hopeless.

THE SURGERY OF TONSILS AND ADENOIDS

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ANATOMY OF ADENOIDS AND TONSILS

THE pharyngeal and faucial tonsils, commonly known as adenoids and tonsils, are a part of Waldeyer's ring of lymphoid tissue, surrounding the junction of the air and food passages. They are composed of lymphatic cells collected into groups called follicles and separated from one another by areas of connective tissue. Adenoids are irregularly distributed over the vault and sides of the nasopharynx; in hypertrophy there is generally a large central mass and a variable amount in the fossæ of Rosenmüller.

The tonsil occupies the sinus or fossa tonsillaris, formed by the superior constrictor of the pharynx and by the anterior and posterior pillars which merge into the soft palate above. Extending obliquely across this space from before backward is a fold of mucous membrane, the plica tonsillaris; the inner border of the anterior pillar is sometimes prolonged over the faucial surface of the tonsil, forming the plica triangularis. These folds are sometimes well defined, but are generally rudimentary. The tonsil does not usually fill the sinus tonsillaris, the space above being known as the supratonsillar fossa; it is irregularly lobulated, between the lobules are depressions or crypts, and on the outer surface is a fibrous capsule. Much of the pathological importance of the tonsil depends on whether these crypts open on the free surface of the gland or whether their mouths are covered by the mucous membrane of pillars or plica tonsillaris.

FUNCTION OF ADENOIDS AND TONSILS

From the histological similarity of these structures it is fair to assume that they have a similar function, whatever that may be. Many theories have been advanced regarding tonsillar functions: that they are residual embryonic remains; that they have some relationship to organs of generation; that they are blood-forming organs in early life; that they are secreting organs; that they supply

lymphocytes to the blood, and that they have an internal secretion. Without entering into a detailed discussion of these various theories, it may be enough to say that there is no conclusive evidence in support of any of them.

The most reasonable theory of tonsillar function is that this tissue exerts a protective influence against bacterial invasion. Anatomically it forms almost a complete ring surrounding the junction of the air and food passages, the part of the body most open to infection. The period of its greatest activity is prior to puberty or during childhood, which age is most subject to acute infections of the upper respiratory tract and to the contagious diseases, most of which are contracted through the mucous membrane of this tract. After puberty, or when the need of functional activity lessens, this tissue tends to atrophy, and hypertrophied tonsils or adenoids persisting after puberty are almost always pathological, the hypertrophy being due to the results of infection and inflammation.

Experiments show that in normal tonsils bacteria are found in the crypts, but not in the tonsillar tissue proper; that the leucocytes found in large numbers exert a phagocytic action, and that inflammation in tonsils is caused primarily not by bacteria but by their toxins.

The theory has been advanced that the tonsils act as immunizing agents, the crypts forming culture tubes in which various toxins are formed and introduced into the system for immunization. The susceptibility which children show to the various contagious diseases and their subsequent immunity during adult life support this theory. That the faecal tonsils must have some function is further supported by the fact that cases which have had the tonsils removed during the period of physiological activity,—that is, before puberty,—show a compensatory hypertrophy of the lingual tonsil. So long as this lymphoid tissue remains healthy it is capable of exerting its protective function, but when it becomes diseased it is no longer beneficial to the body and becomes a source of infection instead of a barrier against it.

CAUSES OF ADENOID AND TONSILLAR HYPERSTROPHY

Lymphoid tissue is normally present in the nasopharynx and pharynx; only when diseased or unduly hypertrophied is it abnormal. Being histologically similar wherever it appears, it would seem prob-

able that hypertrophy of adenoids and tonsils must be due to the same or similar causes.

There is apparently some direct connection between anterior nasal obstruction and adenoid hypertrophy; cases of deviated septum or enlarged turbinates are often accompanied by such hypertrophy. Just what is the connection is not entirely clear, but it is probably a compensatory enlargement, nature's effort to substitute one tissue for another no longer capable of functioning properly. There is some evidence to show that this lymphoid tissue serves to drain the nasal mucous membrane, and if this is true it is easy to understand how the toxins elaborated as a result of the common infectious colds in childhood may serve to set up inflammatory hypertrophy by their passage from the nasal mucous membrane to adenoids and tonsils.

Some paediatricists and orthodontists claim a direct connection between the use of the so-called baby pacifiers and adenoids, presumably because their constant use tends to cause deformities of the jaws, irregular dentition and septal deviation, with consequent nasal obstruction. It would not seem illogical, granting the truth of the above statement, to assume that the increasing prevalence of artificial feeding of infants, with the use of the rubber nipple, might be a factor in the great and apparently increasing frequency of adenoid hypertrophy in children to-day. The reaction of the mucous membrane to the dry, hot air of steam-heated houses and apartments is probably a causative factor in adenoid hypertrophy.

In many cases tonsillar hypertrophy follows adenoid obstruction and is, in part at least, due to it. So long as the adenoid tissue does not interfere with nasal respiration nor encroach on the Eustachian tubes, it does not cause any ill effects. So soon as free nasal respiration is interfered with and mouth-breathing obtains, a compensatory tonsillar hypertrophy occurs, which is further increased by the results of infection. Unless the tonsils have become diseased as a result of mouth-breathing, they almost invariably shrink after the removal of adenoids, permitting free nasal respiration and the resumption of the functions of the nasal mucous membrane. While tonsillar hypertrophy may occur independently of anterior nasal or adenoid obstruction, in the great majority of instances it is secondary to it.

INDICATIONS FOR OPERATION

There are two principal indications: (1) hypertrophy sufficient to interfere with swallowing, talking, or breathing, and (2) local or systemic infections, such as inflammation of the middle ear or mastoid, cervical adenitis, arthritis, nephritis, etc.

(1) The influence of adenoid hypertrophy on nasal respiration and its consequent ill effects are too well known and recognized to call for extended discussion. The most injurious results arise from the greatly increased susceptibility to the acute infections of the respiratory tract and the acute contagions due to the inability of the nasal mucous membrane to perform its functions of warming, moistening, and cleansing the inspired air. Tonsillar hypertrophy, while probably of less importance than that of adenoids, may be so marked as to interfere with deglutition, respiration, or phonation. It is generally conceded by conservative throat surgeons that the mere presence of large tonsils in a child below the age of puberty, or at least under seven years, is not in itself a sufficient indication for operation, unless they interfere with the functions mentioned above, or unless they are foci of systemic infection. Then, too, these large tonsils often shrink after the adenoid operation, as already mentioned.

(2) The connection between adenoid hypertrophy and diseases of the middle ear or mastoid is well known. An examination of the ear-drum will often afford a better indication for the adenoid operation than any symptoms or examination of the nasopharynx. A threatened spontaneous rupture of the tympanic membrane as evidenced by redness, bulging, etc., from acute catarrhal otitis media may often be avoided by simple digital curettage of the fosse of Rosenmüller, and marked retraction of the membrane is a sufficient indication for removal of adenoids.

The connection between adenoid hypertrophy and infections and systemic intoxications is not well established. It has been suggested that infection by this route may be the cause in some cases of the symptom-complex known as acidosis, or acute acid intoxication. During the winter of 1913-1914 there were in Concord some two hundred cases of this disease, if it can be distinguished as a clinical entity, with nine deaths. In practically all the marked cases the

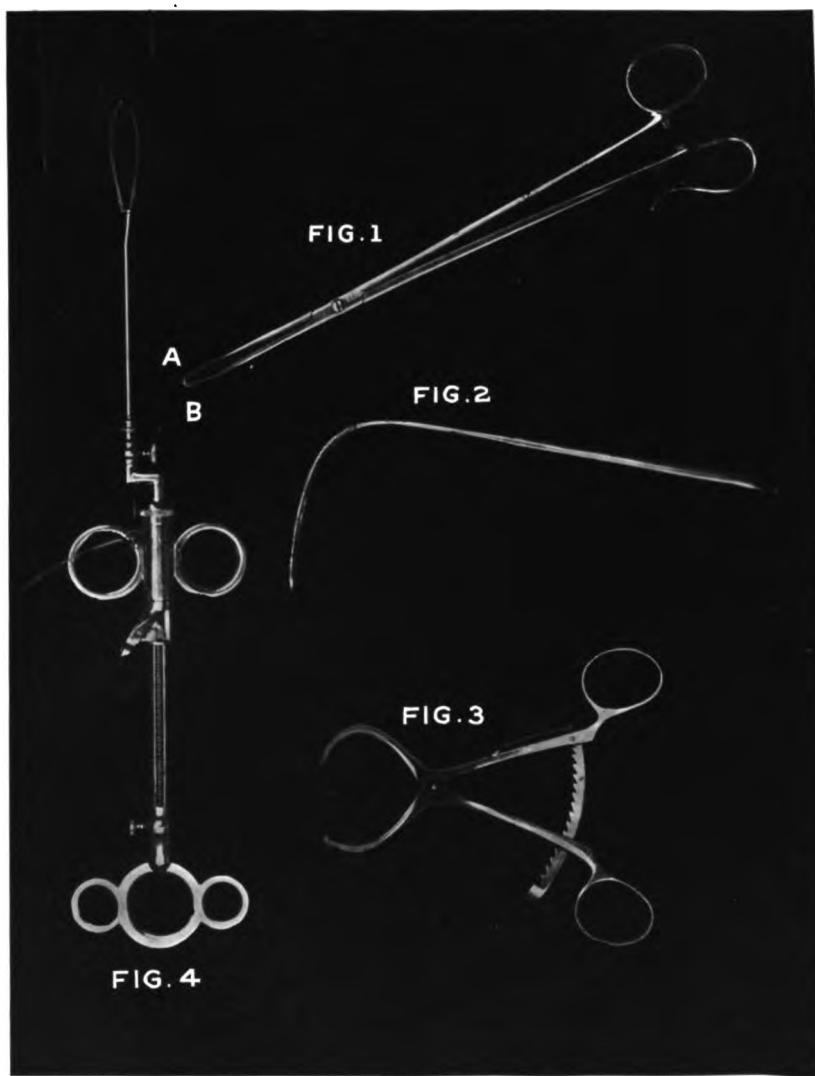


FIG. 1.—Tonsil volvulum forceps.
FIG. 2.—Tongue depressor.
FIG. 3.—Jansen gag.
FIG. 4.—Farlow snare.

symptoms of acidosis, as vomiting, wasting, prostration, fever, etc., were preceded by an acute catarrhal infection of the nasal mucous membrane. In five personal cases of recurrent acidosis in children who had had from three to five attacks removal of adenoids was followed by a complete cessation of the attacks.

That the tonsils acting as acute or chronic foci of infection are responsible for disease of remote organs and tissues is well proved. Various forms of arthritis, as acute articular rheumatism, acute or chronic infectious arthritis, arthritis deformans, also endocarditis, nephritis, thyroiditis, and cervical adenitis, have all been traced to diseased tonsils, and removal of these glands has been followed by relief of symptoms of diseases mentioned. A personal case in point is that of a man aged forty-five years, subject to repeated peritonsillar abscesses, who during an attack developed a marked haematuria with many hyaline and finely granular casts; the kidney condition cleared up entirely on cessation of the attack.

The indication for removal of adenoids is such a degree of hypertrophy, when not acutely inflamed, as to interfere with free nasal respiration, or to cause retraction of tympanic membrane, or acute or chronic inflammation of middle ear or mastoid.

The indications for the tonsil operation are such an amount of hypertrophy, when not acutely inflamed, as to interfere with swallowing, talking, or breathing, repeated attacks of tonsillitis, peritonsillar abscess, diphtheria, or cervical adenitis, or disease of remote organs or tissues as previously mentioned, with a history of repeated throat infections. Any tonsil which on inspection shows crypts filled with cheesy deposits, or from or around which pus can be expressed, should be removed.

CHOICE OF OPERATION

In adopting a method or technic for the removal of tonsils the object to be obtained must be constantly in view,—that is, the complete removal of tonsil and capsule without severe hemorrhage, injury to pillars or uvula, or subsequent contraction or deformity. The arguments against tonsillectomy are that it removes all of an organ which has a protective function, when partial removal would accomplish the same results; that by removing the capsule with the tonsil it removes a tissue which if left in place would preserve the tonsillar

fossa in shape and prevent the fusion of pillars and consequent deformity which sometimes occurs; and that tonsillectomy is more apt to be accompanied by severe hemorrhage than tonsillotomy. To avoid these untoward results, various modifications of the operation have been proposed, such as intracapsular dissection of the tonsil, leaving the capsule in place; punching out tonsillar tissue down to the capsule, and decapitation and digital evisceration or curettage with the finger-nail. It must be apparent to any one having a very limited experience in surgery of the throat that all these operations are inherently more difficult than the method adopted by the majority of operators in this country to-day, the use of the snare; that they all involve more traumatism to the throat, and that the beneficial results to be obtained by leaving a portion of the tonsil or capsule are more than offset by the unsatisfactory results which may follow from allowing these same structures to remain. Two personal cases may serve to illustrate: one, a man, forty years old, who had his tonsils removed by the punch method for relief of repeated peritonsillar abscesses and who has had three abscesses since that operation; the other a girl, fourteen years old, who after an apparently complete tonsillectomy still had sore throat, only relieved by removal of a bit of tonsillar tissue high up in the supratonsillar fossa. The necessity of doing secondary operations on patients who have had tonsils guillotined is a frequent experience of all surgeons doing throat work. There is apparently no evidence to show that removal of the tonsils at any age is followed by deleterious results to the system in general. That fact can be established only after a careful observation of many cases over a long period of years.

There are two methods of performing tonsillectomy in common use to-day: the Sluder operation with the guillotine, and the snare operation. With the Sluder method the writer has had no experience, hence is hardly qualified to criticise it intelligently. It would seem probable that this method in skilled hands is suitable for the removal of a large majority of tonsils, and in cases where it is applicable they may be removed more quickly than by any other method. That it is infinitely superior to the use of the snare; that there is less traumatism to the throat and less likelihood of serious hemorrhage; that with an equal degree of skill any tonsil cannot be equally well removed with the snare, are questions open to debate. The fact that

tonsils may be removed in a few seconds by this or any other method is no argument in its favor. Tonsillectomy is a severe and serious surgical operation, and the same amount of care and attention to detail should be given to it as to any operation of equal importance. A few minutes spent in careful inspection of the throat, dissection of the tonsil, and application of the snare will go far toward avoiding untoward results, and this is of much greater importance than any effort to establish a speed record.

PREPARATION OF THE PATIENT

Tonsillectomy should be a hospital operation, and the preparation of the patient should be as thorough as possible. An examination of the throat should be made to detect varicose veins or abnormally placed arteries. Inquiry should be made into previous history of haemophilia, and, if present, the coagulation time of the blood should be taken. One-half hour before operation Gr. $\frac{1}{4}$ to $\frac{1}{8}$ morphine should be given to adolescents or adults, and Gr. 1/200 to Gr. 1/100 of atropine to children. The atropine checks excessive secretion of mucus and greatly facilitates the operation. For the removal of adenoids alone, nitrous oxide or primary ether anaesthesia is sufficient, but for tonsillectomy light surgical anaesthesia is necessary. The manipulation of the throat and the free bleeding are very apt to interfere with respiration, and, while deep anaesthesia renders it easier to work, the patient is much safer if anaesthesia is so light as not to abolish entirely the pharyngeal and laryngeal reflexes. The patient should be draped with a sheet folded lengthwise to be about eighteen inches wide, pinned snugly about the neck and wound spirally about the body, binding the arm tightly to the sides and feet and legs together. This restrains the patient and greatly facilitates holding him in the sitting position. If the patient is tall enough so that when sitting in an ordinary straight-back chair his head is on a level with that of the operator or a little below, it is not necessary that he be held; otherwise he should be held in the lap of a nurse.

The anaesthetist should stand behind or to one side of the patient, and there should be one assistant. While there may be some theoretical objection to the upright position for tonsillectomy, in practice the writer has never seen or heard of any untoward results traceable to

it, and it greatly promotes ease in operating. It is possible to get direct daylight on the field of operation, and the parts are in the position and relation in which one naturally sees them in examination of the throat. The mouth should be held open by a gag, preferably the Jansen. This is simple in construction, affords a clear view of the throat, and gives good leverage. Any ordinary tongue depressor which is strong enough may be used. In most cases it is better not to use one which is attached to the gag. It is very difficult to adjust this so as to avoid pushing the tongue back against the epiglottis, and if, as often happens, it becomes necessary to make traction on the tongue to relieve obstructed breathing or gain a better view of the throat, it is difficult to do so with a fixed tongue depressor.

TECHNIC OF OPERATION

If both tonsils and adenoids are to be removed, tonsillectomy should precede the adenoid operation, as the bleeding obscures the operative field.

From a surgical point of view, tonsils may be divided into three classes:

1. The *discrete* tonsil stands out from the pillars and very little of the gland is concealed behind the anterior pillar. The capsule acts as a pedicle. These tonsils are of pathological importance chiefly because they obstruct the throat, since, as most of the crypts open on the free surface of the gland, they are seldom chronic foci of infection. They may easily be removed by either guillotine or snare without preliminary dissection or traction.

2. The *buried* tonsil is located deep in the tonsillar fossa, behind the anterior pillar. Its faucial surface is more or less completely covered by prolongations of mucous membrane from the pillars and plica tonsillaris. The tonsil seldom completely fills the fossa, the supratonsillar space generally being more or less free, and it is usually possible to insert a probe between the gland and the anterior pillar nearly or quite to the lower pole. By depressing the tongue it will be seen that in some cases the lower pole of the tonsil appears to be nearly flush with the lower part of the tonsillar fossa, the plica tonsillaris filling in the lower open angle. Most of the tonsillar tissue is located in the upper part of the fossa, nearly or quite obliterating the

supratonsillar space. In applying the volsellum in these cases, the jaws of the instrument should be directed toward the upper part of the fossa, so as to include the major part of the gland in their grasp. In other cases the lower pole of the gland stands out away from the pillars, the plica tonsillaris being only rudimentary. Most of the tonsillar tissue is situated in the lower part of the fossa, and the volsellum should be so applied as to include this lower pole in its grasp. These tonsils may most easily be removed by inserting a Leland knife or similar right-angled, probe-pointed instrument between the anterior pillar and the tonsil and carefully dividing the attachment between these structures down to the lower pole. Then insert the prongs of the closed volsellum behind the anterior pillar, push deeply into the fossa in front of the tonsil, open the jaws of the forceps, grasp the tonsil firmly, and lock the forceps. A volsellum with long, curved prongs is not well adapted for tonsil work, as the prongs are apt to tear out and lacerate the tonsil, especially the soft, friable variety. A forceps with rather short, interlocking teeth is more generally useful, especially if the Leland method is adopted. Occasionally one meets with a very soft tonsil, which tears on the slightest touch, and for these cases the writer has had a volsellum made on the pattern of the ordinary tonsil punch, with the edge of the smaller or male blade serrated. By including as much of the gland within the grasp of the forceps as possible the tonsil is firmly held and tearing out is avoided. Holding the tonsil on tension, with a Lothrop or similar blunt-pointed knife, divide the attachment of the tonsil to the supratonsillar fossa and posterior pillar, when it will be seen to mushroom out, so to speak, over the anterior pillar, showing that dissection is complete. Then slip the loop of the snare over the forceps and, rotating the loop back and forth around the tonsil as a centre, gradually insert the wire between the gland and the pillars, tightening the loop until it is firmly engaged around the base of the tonsil. This manœuvre avoids engaging the pillars or uvula in the grasp of the snare. Then lock the snare and take at least a minute to complete the separation, as by slowly tightening the loop much of the hemorrhage may be avoided. The loop of the snare should be only large enough to slip over the handle of the forceps, as the smaller the loop the easier it will be to engage the tonsil and the less likely to include the uvula. After removing the tonsil, plug the fossa tightly with a

sponge held in a suitable forceps, and continue this pressure until active hemorrhage ceases. Meanwhile the anæsthetic may be renewed. Then examine the fossa by direct inspection and with the finger to ascertain if any portion of the gland or capsule remains, and also inspect the tonsil removed. The operation may then be repeated on the other side. The time spent in this procedure is amply repaid by the knowledge that the tonsil has been completely removed, that there is no severe hemorrhage, and by the freedom from bleeding which obscures the operative field for the other tonsil. In case any part of the gland remains, it is best removed by grasping it with a forceps and reapplying the snare. The tonsil punch is much more likely to lacerate the pillars, and it is difficult to remove completely the remaining portion, especially if any part of the capsule is left.

3. The buried adherent tonsil is apt to be the seat of repeated inflammations, and perhaps of one or more unsuccessful attempts at removal. The faucial surface of the gland is on a level with or below the pillars, more or less firmly adherent to them, and on removal the capsule is found firmly adherent to the bed of the fossa. It is probable that this variety is more than any other a focus of infection. Removal is best accomplished by firmly grasping the gland with a volsellum, and this is rendered much easier by making counter pressure below the angle of the jaw and also against the anterior pillar, thus partially displacing the tonsil from its bed. There is no more important detail in the whole operation of tonsilectomy than getting a firm grasp on the tonsil the first time, as repeated unsuccessful attempts lacerate it and obscure the landmarks. Having grasped the tonsil and put it on tension, the junction of the gland and anterior pillar will appear, and at this point an incision down to the capsule should be made with a sharp, straight scalpel. The capsule is identified by its glistening white surface and is a most important landmark. Into the incision thus made the point of a Lothrop knife should be inserted, and, keeping close to the tonsil, the adhesions separated between tonsil, supratonsillar fossa, and posterior pillar. It is most important to identify and keep close to the capsule, as departure from it may lacerate the pillars or so mutilate the tonsil as to render it impossible to remove it completely on the first attempt. If the dissection is complete, on firm traction the tonsil will roll out over the anterior pillar, and may then be removed as previously

described. It may be necessary, in removing buried tonsils, to push back the pillar with the back of the knife or blunt dissector, but this is generally not necessary if dissection has been complete and sufficient traction is made. There is more danger of hemorrhage from these tonsils than from those not adherent, and it may be necessary to take active measures to check it other than pressure with a sponge. The blood supply of the tonsils is derived chiefly from the tonsillar artery, the largest branches of which enter the gland about midway of the tonsillar fossa. The vessel from which hemorrhage most frequently occurs, however, is one which enters the tonsillar fossa at its upper angle, and is thence distributed to the upper surface of the gland. This artery is probably derived from the anastomosis of the descending palatine and ascending palatine. On inspection of the tonsillar fossa after enucleation the hemorrhage will almost invariably be seen to be coming from its upper angle, and pressure here will in the great majority of cases stop it entirely. If, however, this is not successful, it may be checked by grasping the tissues here with a tenaculum or throat forceps and holding them firmly for a few minutes. Rarely this may fail to check bleeding, when retraction of anterior pillar and pressure will generally reveal a bleeding point, which it may be necessary to surround with a suture placed with a small, full-curved needle. Hemorrhage after tonsillectomy is so almost uniformly from this point that suture of the pillars is very rarely called for, unless these structures have been grossly damaged during the operation.

REMOVAL OF ADENOIDS

After completing the tonsil operation and checking the hemorrhage, adenoids may be removed if necessary. A preliminary examination of the nasopharynx should be made with the finger to determine the presence and location of the growth. The greater part of the tissue may best be removed with the La Force adenotome, which cuts from below upwards and thus obviates the danger of stripping the mucous membrane of the pharynx or leaving part of the growth hanging, which sometimes occurs with the ordinary Gottstein curette. The operation should be concluded by a thorough scraping of the vault of the pharynx and fossæ of Rosenmüller with the fingernail. Particular attention should be paid to the fossæ, as presence

of lymphoid tissue there is the chief cause of middle-ear trouble. After curetting, a sponge held by a suitable forceps should be pressed firmly into the vault of the pharynx, held there until active hemorrhage ceases, and then a careful digital exploration made to be sure that all adenoid tissue has been removed.

AFTER-CARE

On completion of the operation, if there is no undue hemorrhage and patient is otherwise in good condition, he should be returned to bed, turned well over on the right side, and carefully watched. Never allow a patient after tonsillectomy to lie on the back, as it is very difficult to determine whether or not he is bleeding. If rate of swallowing is faster than five times a minute, the throat should be inspected to determine the presence of hemorrhage. The patient should, if possible, be kept under observation in the hospital for twenty-four hours, and, if necessary to remove him before that, the mouth and nose should be covered with a veil, to lessen the danger of infection. In the great majority of cases no further care other than an antiseptic mouth-wash is necessary.

The writer desires to disclaim any originality in the operative procedures described. The technic is that observed in the Boston City Hospital, and largely elaborated by the surgeons of that institution. In view of the vast amount of throat surgery being done at the present time, it seems highly important to emphasize the necessity of carefully considering the indications for operation and of paying strict attention to its details, and this is the main purpose of this paper.

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